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<http://dx.doi.org/doi:10.21954/ou.ro.0000de61>

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THE ROLE OF SIR JOSEPH BANKS, K.B., P.R.S., IN THE PROMOTION
AND DEVELOPMENT OF LINCOLNSHIRE CANALS AND NAVIGATIONS.

by

WILLIAM MICHAEL HUNT. M.Phil., B.Sc.(Econ.)

A thesis submitted to the Open University for the degree of
Doctor of Philosophy and pertaining to the Arts (History)
discipline.

1986

Author's Number: HDH 2114

Date of Submission: May 1986

Date of Award: 10.11.86

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ABSTRACT.

Sir Joseph Banks, K.B., P.R.S., was Lincolnshire's foremost figure of the late 18th. century and his influence within the county was such that few public works were undertaken with which he was not connected. Included in these public works were canal and navigation promotions and major works of drainage of the fenlands which had a secondary navigation function associated with them.

This thesis begins with a brief biography of Sir Joseph which places him in his historical setting both nationally and internationally and is followed by a consideration of his life in his home county. In this his waterways' connections are introduced.

For Sir Joseph to understand waterways' promotion he had to learn and this process is discussed in detail. Most of this took place outside Lincolnshire and before the periods of 'Canal Mania' and, therefore, he was ideally placed to make use of this acquired expertise for the benefit of his county when the pressure for canal promotion began in Lincolnshire.

The heart of the Lincolnshire systems of canals and navigations is now, as in his day, the River Witham and Banks' role as a Commissioner for drainage and navigation is considered. Included here is his part in the promotion of the drainage of the fens to the east of Boston and the formation of the 'Witham Navigable Drains'.

Each of the Lincolnshire waterways with which he had some connection is discussed as are the details of the various

roles he assumed. On the Sleaford Navigation, for example, he was a promoter; on the Horncastle Navigation he was 'President' of the company, while on the Grantham Canal he was a protector of the Witham Trusts' interests during the promotion period.

In his different capacities Sir Joseph was often in contact with the most important canal engineers of his time. With them he developed different relationships and those with William Jessop, John Rennie and George Maxwell are especially investigated in depth.

Finally, an assessment is attempted of the part he played and the significance of his contribution to the promotion and development of the Lincolnshire waterways.

ACKNOWLEDGEMENTS.

The two most important sources of archive material relating to Sir Joseph Banks' connection with the Lincolnshire waterways are undoubtedly those in the Spalding Gentlemens' Society at Spalding, Lincolnshire, and that in the Sutro Library at San Francisco, California, USA. I am extremely grateful to the Chairman, Secretary and the Committee of the Spalding Gentlemens' Society and the Trustees of the British Museum (Natural History) for their considerable assistance in allowing me to make use of these deposits for, without access to these documents, this thesis could not have been undertaken.

I would also like to thank the following librarians, staffs, etc. for their help in this research: Anglian Water Authority (Lincolnshire Rivers Division), Boston; Boston (Lincs.) Borough Council; Boston (Lincs.) Reference Library; British Museum Library, London; British Museum (Natural History) Banksian Collection and General Library; Computer Section of Boston College of Further Education, Boston, Lincs.; House of Lords' Record Office; Library of the Institution of Civil Engineers, London; Lincolnshire Archives Office, Lincoln; National Maritime Museum, Greenwich, London, and the Royal Society of London.

My thanks go to Miss Dorothy Norman of the British Museum (Natural History) for invaluable help.

Access to the Sutro deposit microfilms was an absolute necessity if this work was to reach fruition and, thus, I am

deeply indebted to the Banksian expert, H.B. Carter of Congresbury, Avon, who, with unfailing helpfulness, made these essential documents available to me and with whom I had many stimulating discussions about Sir Joseph.

For the second time it gives me great pleasure to thank my external supervisor, Charles Hadfield, for his wisdom and guidance which has been with me constantly during the six years of this study. He is, truly, the best of teachers. To his wife, Alice Mary, I would like to express my thanks for her patience when I disrupted her household during my tutorial sessions.

Lastly, and perhaps this should be firstly, I thank my wife, Carol, and children, Oliver, Emily and William, for their understanding and support during the long hours they were a 'thesis-widow and orphans'.

STATEMENT.

Chapter 7 of this thesis, 'The Sleaford Navigation', is based on part of this author's M.Phil. thesis, 'A History of the Sleaford Navigation', submitted to the Open University in 1979.

Those parts of Chapter 13 which relate to William Jessop and John Rennie on the Horncastle Navigation draw heavily on this author's published monograph,

'The Horncastle Navigation Engineers, 1792-1794.'

which appeared in the 'Journal of the Railway and Canal Historical Society', (published by the same, vol.xxv, no.1., March 1979), pp.2-11.

Throughout this work all original spellings and punctuations have been retained in quotations from both manuscript and printed sources, except where indicated.

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INTRODUCTION

Every two or three minutes the thunder of a jet airliner, making its final approach to landing at London's Heathrow Airport, breaks into the bustle of life of the west London suburb of Heston. Today this area is part of the urban sprawl of the metropolis - concrete, tarmac and people - a noisy, lively community but, being between the A.4 trunk road and the M.4 motorway, it is not very well-known to most Londoners.

Like so many of London's suburbs it has grown up around a village nucleus which, even 50 years ago, was rural. The centre of this village's worship, the parish church of St. Leonard, still stands and physically dominates the scene. A Norman foundation, the present church dates from the second half of the 19th. century. Its grounds are entered through a lych-gate, a reminder of the rural atmosphere which once was to be found all around. The churchyard is lovingly tended and neatness and order abound. In summer especially this open space is a sun-trap and affords a tranquil spot amidst the movement and rush of everyday life. This peace is even more enhanced within in cool interior of the church itself.

The building is architecturally unremarkable and boasts only a few memorial tablets, most saved from the previous structure. However, set high on the north wall of the nave near the chancel is a small, white, marble slab on which is inscribed:

'In this church is buried the Right Honourable Sir Joseph Banks, Bart. K.B. President of the Royal Society from 1778 - 1820. Died at Spring Grove, 19th. of June 1820, Aged 77.'

This memorial is the only physical dedication in Great Britain to a man who had a profound influence upon the science, industry, exploration and growth of Empire during the latter part of the 18th. century and the beginning of the 19th. His contribution in each of these fields of endeavour was immense and, as Cameron says (1), in the 18th. century there was no-one quite like Sir Joseph Banks. A friend of kings, the nobility, landed gentry, farmers, merchants and labourers, he could mix freely and easily with all sorts and conditions of men with the common interest of the public good at heart.

CHAPTER ONE

A BRIEF LIFE OF SIR JOSEPH BANKS

Joseph Banks was born on 2 February 1743 O.S. in Argyle Street, London. He was born into one of the most distinguished of Lincolnshire's landed families, the fortunes of which had been founded by his great-grandfather, usually called Joseph Banks I (1665 - 1727), being the first Joseph Banks of Revesby Abbey, the family seat in south Lincolnshire. This had been purchased, together with the estate, for £14,000 in 1714 with income from a family inheritance and a successful solicitor's practice in Sheffield, Yorkshire, where he had been the agent to many important county families.

Joseph Banks I was active in public affairs and was returned as M.P. for both Grimsby and Totnes. When he died in September 1727 he was succeeded by his son, Joseph II (1696 - 1741).

In 1714 Joseph II married Ann Hodgkinson, an heiress from Overton, near Ashover, Derbyshire. the estates of whom, therefore, passed into the Banks family. By Ann, Joseph II had three sons, Joseph III (who died unmarried in 1740 while his father was still alive), William and Robert. So, when Joseph II died in 1741 he was succeeded by his second son,

William.

On 26 September that year William married Sarah Bate, the eldest daughter of William Bate of Derbyshire. The Joseph Banks who is the subject of this work was their only son, born in 1743. On 17 October the following year his only sister, Sarah Sophia, was born.

Little is known of Joseph's early life. He was privately educated until the age of 9 when, in 1752, he entered Harrow School. Four years later he transferred to Eton and for two years he was, according to Sir Everard Home (1),

'.....so immoderately fond of play that his attention could not be fixed to study....'

So, it was with some surprise that, at the age of 14, he suddenly took to reading in his leisure time. Towards the end of his life Sir Joseph explained this change of attitude to Sir Everard,

'.....one fine summer evening he had bathed in the river as usual with other boys, but having staid a long time in the water he found when he came to dress himself, that all his companions were gone; he was walking leisurely along a lane, the sides of which were richly enamelled with flowers; he stopped and looked round, involuntarily exclaimed, How beautiful! After some reflection, he said to himself, it is surely more natural that I should be taught to

know all these productions of Nature, in preference to Greek and Latin; but the latter is my father's command and it is my duty to obey him; I will however make myself acquainted with all these different plants for my own pleasure and gratification....'

Thus began his life-long passion for botany and the natural sciences.

Joseph left Eton in 1760 and entered Christ Church, Oxford. His father died the following year when Joseph was 18 and his mother took a town house in Chelsea, London. This rented accommodation happened to be close to the Physic Gardens of the Society of Apothecaries, a botanical garden which had been expanded under the patronage of Sir Hans Sloane. It was in these gardens that the young Joseph found abundant opportunity to develop his new-found interest.

At that time the Professor of Botany at Oxford University was Humphry Sibthorp and he gave no lectures (2). It is said that in the thirty-five years during which he occupied this position he gave only one. Joseph was determined to have a teacher and he obtained permission from the Oxford authorities to approach John Martyn, the Professor of Botany at Cambridge, and offered to pay for private tuition. This was obtained in the person of Israel Lyons, a botanist and astronomer, whom Banks had brought over from Cambridge (3).

Joseph remained at Oxford until he was nearly 21, leaving in December 1763. On coming of age he succeeded to the absolute possession of his Lincolnshire and Derbyshire

estates. The Lincolnshire ones alone had a rent-roll of the considerable sum of £6,000 a year. From then onwards, and with the aid of this ample fortune, he was able to devote himself entirely to the natural sciences.

When only 23 he was elected a Fellow of the Royal Society (4) and in April of that year (1766) he sailed with his friend, Lieutenant Phipps, afterwards Lord Mulgrave, to Newfoundland and Labrador aboard HMS 'Niger', under the command of Sir Thomas Adams. He had joined the expedition as naturalist to investigate the flora of those parts, which were then botanically unknown. The large collection of plants and insects which he brought back from the expedition (5) are deposited today in the Botany Department of the British Museum (Natural History) at South Kensington, London. His journal of the trip is in the possession of the South Australia branch of the Royal Geographical Society in Adelaide.

Soon after his return (in 1768) the Royal Society resolved to fit out an expedition to travel to some point in the Pacific to observe the 1769 transit of Venus. A 'memorial' was presented by the Society to King George III requesting assistance with the expenses of the voyage and he caused the sum of £4,000 to be placed at their disposal. From then the Admiralty also worked closely with the Society and it was they who insisted that the command of the expedition be entrusted to Lieutenant James Cook, RN. (6). Through the influence of his friend, the 4th. Lord Sandwich, the First Lord of the Admiralty, (a fishing friend of his youth and a Lincolnshire landowner), Joseph was authorised to conduct

explorations on this voyage (7). At his own cost, amounting to about £10,000 (8), he provided all the stores and equipment needed for the acquisition of collections in every branch of natural science. To assist him in this he engaged a friend of recent acquaintance, Dr. Daniel Carl Solander (9) to go with him. Solander was Swedish and had been a pupil of Carl Linnaeus. Banks also took a staff of two draughtsmen, two colour artists to illustrate objects which could not be brought home and four servants to assist in collecting and preserving.

The fact that Joseph was capable of equipping his part of the expedition in the time available says much about his abilities as an organizer even at this young age.

The vessel chosen for the voyage was a converted Whitby 'Cat', the 'Endeavour', built in 1764, and formerly the 'Earl of Pembroke'.

The expedition left from Plymouth on 26 August 1768. So much has been written about Cook's 'First Voyage' that it need not be discussed further here. Suffice to say that both Banks and Solander returned home in good health in July 1771 with an enormous mass of specimens (10).

At Banks' expense Solander's descriptions of their collections were transcribed for publication into five folio volumes and, to illustrate the text, 700 copper plates were engraved. Their joint publication did not, however, take place due to the unexpected death of Solander in 1782.

Banks was extremely keen to join Cook's 'Second' expedition. Cook had been promoted to the rank of Commander on his return from the South Seas and was appointed to the

command of HMS 'Resolution' four months later. The object of this second voyage was to renew the search for an unknown continent in the south. Joseph was determined to sail with him and £10,000 is the frequently-quoted amount spent on fitting-out staff and equipment (11). However, all this money was spent to no avail as he was destined not to go. This was primarily due to a clash between Banks, Cook and the Admiralty about the requirements for the expedition. Cook had been eager to accommodate Banks even to the extent of making structural alterations to the 'Resolution' to take all the equipment Banks felt he wanted. However, it was soon shown that these alterations could not be made without a serious deterioration in the handling qualities of the ship. Cook had to write to the Admiralty informing them of this (12). Banks wanted the Whitby-built 'Resolution' replaced by an East Indiaman or a 40-gun naval vessel but Cook was adamant in the retention of his vessel. It was decided, therefore, to return the ship to its original condition, upon which Banks refused to sail in her. He never forgave the Admiralty for this failure to accommodate him but the Navy Board was concerned with undertaking a nautical expedition and, to them, Banks and his party were a troublesome extra to be carried on voyage and who must take second place to anything which may have jeopardized the success of the primary objective.

Joseph was now left with the staff he had engaged and the mass of equipment he had bought. With all this he decided to set out, with Solander, on a scientific expedition to Iceland. This choice of this island may have been Solander's as an old friend of his, John Gerard Konig, had paid a long

visit there in 1765 and had possibly imparted his enthusiasm to Solander.

A vessel, the 'Sir Lawrence' (13), was chartered at a cost of £100 a month and the party sailed on 12 July 1772. On the way they visited the island of Staffa and Banks was the first to describe the columnar basalt formations there (14).

They arrived in Iceland on 22 August and spent a month exploring and collecting. In fact, Solander made one of the first large collections of Icelandic flora. Whilst there they also climbed the volcanic Mount Hecla and visited the hot springs and geysers which are common in the area.

The return voyage was uneventful and Joseph spent some time in Edinburgh before making his way to London, arriving there in November 1772.

Another overseas trip was made to the Low Countries in 1773 and three years later, in 1776, he moved into what was to be his permanent London address, 32, Soho Square. No more foreign expeditions took place as his election to the Presidency of the Royal Society in 1778, at the age of 35, made all further attempts impossible. He filled that Chair until his death in 1820.

In 1772 he was appointed scientific adviser to the Royal Gardens at Kew which brought him into close contact with the King and the Royal Family.

Banks was a great favourite with the King, a friendship which had grown since his return with Cook in 1771 and his career almost coincided with the reign of his royal patron, closing in the same year.

In March 1779 Joseph married Dorothea, daughter of William

Weston-Hugessen, a Kentish landowner. He was created Baronet in 1781, invested with the Order of the Bath in 1795 and admitted to the Privy Council in 1797 (15).

During his long tenure as President of the Royal Society Sir Joseph did much to raise the standard of scientific achievement in Britain and, as a part of this policy, he made the Fellowship much more difficult to obtain than it had previously been.

Banks probably made the Royal Society more influential throughout Europe than it had been since the presidency of Sir Isaac Newton and at home too his personal influence grew. It was this which obtained royal assent to the Society's geodetical survey under General Roy in 1784 which provided the basis of the Ordnance Survey. In 1785 he persuaded the King to guarantee the £4,000 cost of Sir William Herschel's 40-foot telescope (16) while, in 1817, and at his suggestion, the Society's Council recommended the Government send out Arctic expeditions, thereby recalling the link with Cook who had been given a similar mission on his fateful 'Third Voyage'. In 1817 two expeditions were dispatched, those of Capt. John Ross and Sir John Franklin. Both were instructed, as Cook had been, to search for a North-West Passage, each by a different route. Franklin was probably well-known to Sir Joseph, having sailed previously with Matthew Flinders (17). In fact, Franklin was Flinders' cousin. Also, Flinders and Franklin came from very near Banks' Lincolnshire home of Revesby, from Donington and Spilsby respectively.

In a further connection with the promotion of exploration and sea navigation, Sir Joseph was a member of the Committee

At the Court at St. James's
the 29th of March 1797.

Present,

The King's Most Excellent Majesty
in Council.

This Day the Right Honourable Sir
Joseph Banks Baronet K.B. was, by His
Majesty's Command, Sworn of His
Majesty's Most Honourable Privy
Council, and took his Place at the
Board accordingly—

Steph: Cottrell

*The Oath of a Privy Counsellor
taken by The Right Honourable Sir
Joseph Banks Baronet K. B. the 29th of
March 1797. —*

*You shall swear to be a true and faithful Servant
unto the King's Majesty as one of His Majesty's —
Privy Council. You shall not know or understand of
any manner of thing to be attempted, done or spoken
against His Majesty's Person, Honour, Crown or Dignity
Royal, but you shall let and withstand the same to
the uttermost of your power, and either cause it to be
revealed to His Majesty Himself, or to such of His —
Privy Council, as shall advertize His Majesty of the same.
You shall in all Things to be moved, treated and debated in
Council, faithfully and truly Declare your Mind and Opinion,
according to your Heart and Conscience, and shall keep
secret all Matters committed and revealed unto you, or that —
shall be treated of secretly in Council. — And if any of the
said Treaties or Councils, shall touch any of the Counsellors,
you shall not reveal it unto him, but shall keep the same
until such time, as by the Consent of His Majesty, or of the
Council, Publication shall be made thereof. You shall to
your uttermost bear Faith and Allegiance unto the King's
Majesty, and shall assist and defend, all Jurisdictions,
Pre-eminences and Authorities granted to His Majesty,
and annexed to the Crown by Act of Parliament or
otherwise, against all Foreign Princes, Persons, Prelates,
States or Potentates; And Generally in all things, you
shall do as a faithful and true servant ought to do to
His Majesty; So keep you God, and the Holy Contents
of this Book. —*

of the Board of Longitude.

In other fields also Banks was a pioneer. He brought to the notice of the public the qualities of India rubber and was an early supporter of tea cultivation in India. On the botanical side he was the prime mover in the establishment of botanical gardens on the island of St. Vincent in about 1765, in Jamaica in about 1775 and also in Sri Lanka (Ceylon), and he gave much assistance in the founding of another near Calcutta.

For all his interest in botany, however, he published very little on the subject (18). A major contribution he made to the development of British botanical study was to be a co-founder of the Horticultural Society which, after his death, honoured his memory with the institution of the 'Banksian Medal' (19).

Sir Joseph was an internationalist as far as science was concerned and the wars with France which were fought throughout the latter part of his life proved an inconvenience to the exchange of scientific ideas which he held so dear. On a number of occasions he made representations to the British government to restore scientific collections to the French which had been captured during naval actions. Once he acted on his own responsibility when the collection of Jacques Julien de La Billardiers (1755-1834) was taken. The refugee French princes in England donated it to the British Museum but Sir Joseph insisted that it be forwarded to France (20). This was complied with and that collection still flourishes in the 'Jardin des Plantes' in Paris.

Ever since his voyage to Iceland in 1772 Banks had felt a



THE BANKSIAN MEDAL

strong affinity with that island. Whilst there he had purchased the library of the Icelandic historian Helldén Einarrson, and he presented this to the British Museum and when, in 1809/10 famine threatened the islanders, Sir Joseph took measures to alleviate the critical situation. At that time Britain was at war with Denmark (21) and, as a Danish possession, contact was not permitted with Iceland. However, through Sir Joseph's active intervention as a Privy Councillor, a special licence was granted for vessels to go to that island (22).

He was an ardent friend of the 'Association for the Exploration of Tropical Africa' and it was under his auspices that Mungo Park (expedition of 1795-1805), Frederik Horneman (1799-1800), J.L. Burckhardt (1812-14) and, after Banks' death, Hugh Clapperton (1822-25), were sent out.

Banks' house in Soho Square was one of the social centres of London - every learned man, of whatever nationality, was welcome and his house, library, herbarium and museum (he was a great collector of all types of articles) were open to them. His weekly breakfasts and soirees were informal conferences at which the latest developments in science and technology were discussed.

Throughout his life Sir Joseph maintained a close contact with Lincolnshire. He would leave London regularly in August and return to town between October and the new year although he often visited at other times also. At Revesby he again kept almost open house and took part in local sports and festivals, such as the Horncastle 'Picnic Ball', given for

the benefit of the public dispensary of that town. In later years, when he was subject to repeated attacks of crippling gout (23) and unable to travel to Revesby so frequently, the dispensary suffered also, until the Dymoke family, of Scrivelsby, revived the old annual custom.

Sir Joseph was intensely interested in the promotion of the economy of the country and of Lincolnshire in particular and this, in the case of the county, primarily depended upon two factors, the development of existing drainage waterways into navigations capable of carrying the agricultural produce of the area to the consuming regions to the west, north and south, and the extension, for this purpose, of the amount of agricultural land

Years of combined effort produced a great change in the landscape of the south Lincolnshire fens and East Fen, in particular, was transformed into one of the richest sheep-grazing and corn-producing areas in Britain.

In November 1801, Sir Joseph was elected a member of the French 'Institut National' in recognition not only of his services to science but also for the aid he had given to many scientific Frenchmen. Banks was placed at the head of the Institut's eight foreign members, amongst whom were Joseph Priestley and William Herschel. He was highly appreciative of the honour of membership and, in accepting it, he wrote,

'I consider this mark of their esteem as the highest and most enviable literary distinction which I could possibly attain.

To be the first elected to be an associate of

the first Literary Society in the world surpasses my most ambitious hopes ...' (24)

That response was the occasion for an anonymous and bitter attack upon him, possibly by an old opponent, Bishop Horsley, who had opposed his election as Royal Society president.

Sir Joseph had always attempted to keep science free from politics and the effects of warring nations, perhaps a too idealistic view for that time. His reply to the Institut was, however, couched in somewhat injudicious language as the two countries had not yet then signed the Treaty of Amiens.

In the attack against him, in the form of a printed volume entitled, 'Letter to the Right Honourable Sir Joseph Banks K.B. containing strictures on his letter to the National Institute of France' by 'Missogallus', Sir Joseph was accused of disloyalty, want of patriotism and discredit to the Royal Society. The writer appeared to be hoping that this attack would arouse the susceptibilities of King George prejudicially against Banks, but, if they were aroused, the royal displeasure passed quickly. During the remaining 18 years of his life there was no more questioning of Sir Joseph's actions or of his autocratic ascendancy as President of the Royal Society.

During the last 15 years of his life Banks was crippled with the gout. This appeared first when he was about 40 and it became progressively more severe until, from about 1810, he had to be wheeled or carried in a chair by his servants. However, he rarely failed to attend meetings of the Royal Society or the Royal Society Club on account of this

affliction.

Soon after Sir Joseph was married he and his wife and sister found it convenient to lease and, later, purchase, a small villa near Hounslow Heath called 'Spring Grove' (25), situated in grounds which were partly woods and partly ornamental gardens. The primary reason for this move was that Soho Square lacked a garden of any kind but it was also near enough to Kew Gardens for him to oversee the work there, a position he had assumed in 1772.

He took the Chair at the Royal Society, as usual, on 16 March 1820 but, in May (26), declining health decided him to resign the Presidency. At the unanimous request of the Society's Council, and King George, he was induced to withdraw his resignation. However, Sir Joseph died at 'Spring Grove' the next month, on 19 June.

In April 1821 Baron Cuvier pronounced a grand eulogy on Sir Joseph before the Royal Academy of Sciences of France in which he testified to Sir Joseph's generous intervention on behalf of foreign naturalists. Another public tribute was paid by Sir Everard Home in the 'Huntarian Oration' given before the Royal College of Surgeons on 14 February 1822.

To his life-long friend and librarian, Robert Brown, Banks left his house in Soho Square, subject to the wish of Lady Banks and £200 a year; also his library and natural history collection with reversion to the British Museum. That library was the finest collection of books on natural history ever brought together and contained many volumes of the transactions of foreign learned societies. Much of this library is deposited in the British Museum (Natural History)

at South Kensington, London.

His main estates in Lincolnshire passed to his wife's relatives, the Knatchbull and Stanhope families.

As an author Sir Joseph found no place in popular memory and, considering his eminence in the scientific world, it is surprising that he wrote so little for publication. What was published was contributed chiefly to the 'Philosophical Transactions' of the Royal Society and to the 'Annals of Agriculture'. Sir Joseph's function was not one of original authorship but of patronage to science, acting as a catalyst by giving those more gifted than himself the opportunity to engage in research and discovery.

There were some who thought his bearing in the Chair of the Royal Society was not infrequently arrogant. That he had great strength of will was apparent in all his undertakings and, after his return from Australia, his influence was very great - everything of a scientific nature seemed to gravitate to him naturally and possibly his long tenure in the presidential position gave him an authoritative manner which suggested despotic tendencies. However, the reason for this opinion can be found in the internal dissensions of the Royal Society.

At that time the Society was Britain's only major scientific association and, therefore, most of the jealousies of the learned men of the day were concentrated within that single group. Sir Joseph's natural disposition was to attempt to mediate between these differences but the friction was exactly of the kind to be intensified by his specialisation in natural history. The mathematicians had great antipathy

towards the natural scientists and, for the most part, had little appreciation of the achievements of those without a mathematical background.

This would seem to account for the criticism of Sir Joseph's presidential conduct and Dr. Andrew Kippis, FRS, dealt with this in his, 'Observations on the late contests in the Royal Society'. In this he vindicated Sir Joseph's actions when he said,

'... I do not find that a charge of this sort is brought against him by those who have it in their power to be better judges of the matter. He appears to be manly, liberal and open in his behaviour to his acquaintances and very persevering in his friendship. Those who have formed the closest intimacy with him have continued their connection and maintained their esteem and regard. The man who, for a course of years, and without diminution, preserves the affection of those friends who know him best, is not likely to have unpardonable faults of temper. It is possible that Sir Joseph Banks may have assumed a firmer tone in the execution of his duty as President of the Society and have been free in his rebukes, where he apprehended there was any occasion for them. If this hath been the case, it is not surprising that he should not be universally popular ...'

Sir Joseph was interred at St. Leonard's church, Heston, Middlesex, the parish in which 'Spring Grove' is situated. The church, now rebuilt, covers his and Lady Banks' grave. In his will he requested a strictly private funeral, even asking his friends not come in order to avoid the sadness of witnessing the ceremony. He also desired that no monument be erected to his memory. This request was not fully complied with as the memorial tablet mentioned previously is to be found set high in the north wall of the nave near the chancel.

CHAPTER TWO.

SIR JOSEPH BANKS IN LINCOLNSHIRE

In view of his busy life it might be expected that Banks, as squire of Revesby, would be an absentee landlord with little interest in the workings of his estate and the doings of his humbler neighbours. However, nothing could be further from the truth.

Sir Joseph had a hand in almost all the county activities, so much so that some of his London 'enemies', envious of the position and reputation he had gained, wished he would stay in Lincolnshire. There was, for example, the opposition to his election as President of the Royal Society. Dr. John Walcot, under the pseudonym, 'Peter Pindar', wrote a satirical poem entitled, 'Peter's Prophecy ...' (1), in which he said,

'... Then to your turnip fields retire, in peace retire,
Return like Cincinnatus, country squire,
Go with your wisdom and amaze the boors
With apple trees' and shrubs' and flowers' amours,
And tell them all, with wide-mouthed wondering
How gnats can make a cuckold of a fig.
Form fly clubs, shell clubs, weed clubs, if you please

And proudly reign President of these.

Go, and with your periwinkle wisdom charm

With lives of lobsters, oysters, crabs alarm

And tell how, like ours, the females woo'd

By kissing people o'er the realms of mud.

Thus, though proud London dares refuse your fame

The towns of Lincolnshire shall raise your name,

Knock down the 'Bear', the 'Bull and Calf' and 'King',

And bid 'Sir Joseph' on their signposts swing...' (2)

Sir Joseph's enemies little realised how popular he was in Lincolnshire. His visits to Revesby were very much looked forward to. He created a sensation in 1766, while still a young man of only 23, with his lavish hospitality to mark the opening of the Grand Sluice on the northern side of Boston which was constructed to prevent tidal waters flowing upstream beyond that point, that is, upstream of the northern limit of Boston town. He entertained a large house-party for the event and, with it, he introduced a system of almost feudal generosity at Revesby for all and any callers, who were given roast beef, bread and beer.

When, much later, the engineer, John Rennie, was visiting Revesby at the time of the surveys for the draining of the fens east of Boston he asked the butler if he might have the same postboy as he had had that day to take him to the particular fen he was working on. The butler said that this could not be as the young man had been promised a taste of Revesby ale and it would be impossible for him to work afterwards and another would be found.

These undrained fens stretched almost from the gates of Revesby Abbey to far beyond the horizon to the south and west and comprised the three areas of East, West and Wildmore Fens. These were the haunts of wildfowl and marsh creatures and Sir Joseph was not slow to realise and urge upon his neighbours the feasibility of draining these wastes for the benefit of the landowners and people as a whole. Of his visit to Revesby, the Secretary to the Board of Agriculture, Arthur Young, wrote,

'... Sir Joseph had the goodness to order a boat and accompanied me into the heart of this [East] fen, which in the wet season had the appearance of a chain of lakes, bordered by great crops of reeds ... It is in general from three to four feet deep in water, and in one place, a channel between two lakes, five to six feet ...' (3)

It was in companionship with, and with the help of, Sir Joseph that Arthur Young made the first catalogue of the flora of East Fen.

East Fen was the most drowned and desolate of all but Banks persevered in his efforts until neighbouring landowners and statutory drainage authorities agreed to join together in reclaiming the unhealthy 'rotten lands'.

One of Sir Joseph's principal motives for this work was to increase the production of cheap food for the home market. Corn had become scarce and it was almost at famine prices by the late 1790's. The war with France made it difficult to

obtain from abroad, therefore, Sir Joseph worked diligently to extend the food lands of Lincolnshire by bringing large, new areas under tillage.

In this he was continuing his family's work for, from 1754, Sir Joseph's father had been a prime mover in the schemes for the drainage of Holland Fen, on the west side of Boston (4). The construction of the Grand Sluice at Boston was the preliminary to the drainage of this fen and the East, West and Wildmore Fens on the east of the River Witham.

Sir Joseph threw himself into the schemes for drainage with great enthusiasm, perceiving that they were for the public good and also that, with the unimproved West Fen coming almost to the gates of Revesby Abbey itself, the drainage of these districts would provide him with great personal financial gain.

There is some element of mystery about one aspect of Banks' activities in this drainage as he seems at one time to have been opposed to it (5). An anonymous correspondent in the local newspaper voiced a great deal of opposition to Banks (6) and he was revealed eventually as the Rev. Edward Walls of Spilsby.

Something of Sir Joseph's influence in the enclosure of Wildmore Fen can be found from official records and also from the diary of John Cragg of Threethingham (7) who attended some of the meetings held at Horncastle in 1799. He is one of the few people to have left an eye-witness account of Banks in Lincolnshire. For 27 August 1799, he wrote,

'I slept very well and rose at 5.30 to write

this account and the list of towns having the right of common upon Wildmore Fen. Called on Mr. Fretwell and saw the church and then to the meeting about the Wildmore Enclosure. Sir Joseph Banks was in the Chair and he got through in a very masterly manner. About 70 people were present and nothing more was done than a mere general outline of the business and went so far as to show that the proprietors were willing to enclose upon fair terms....

Sir Joseph's argument with regard to the chapels recommended to be erected by the proprietors by the Bishop [of Lincoln] was very masterly. He said it was unreasonable to think the lay proprietors should be at such an expense in building and endowing them when the Church would receive so great an increase in their revenue by their allotments for tithes, and in regard to tithes he said their share was not considered upon due principles which it ought to be and he hoped that he should be able before long to bring a proposition much in favour of the country in regard to these matters...'

The need for food at this time had become a matter of national concern. The French Wars had resulted in high prices being charged, especially for cereals, particularly with the fear of blockade of the East Coast and this, together with the increasing urban non-agricultural population, accelerated

the move towards enclosure, particularly of marginal or waste land. Banks was the lessee, under the Duchy of Lancaster, of the manorial rights in East, West and Wildmore Fens. He was also a landowner of considerable acreage in his own right and, therefore, directly concerned with the possibility of improvement. Before the meetings which Cragg reported, Banks had written that he was hurrying into Lincolnshire to reconcile the fencing interests of the landowners of 23 parishes and to engage them in dividing a common of valuable land, in fact, Wildmore Fen. At the same time the draining of 29,000 acres of East and West Fen was under consideration. By 1801 Banks could report to the 1st. Earl of Liverpool (then Chancellor of the Duchy of Lancaster and President of the Board of Trade in the Addington administration) that arrangements for the enclosure of 40,000 acres of common land in 50 parishes was complete (8). In 1805 he was able to write that he thought little of the defeat of Austria at Austerlitz - it was too remote. Instead, he said,

'... we think most of the progress of our drainage, which is very prosperous ...' (9)

It was not only in the Fens where Sir Joseph took an interest in enclosure. He owned land in many parishes, for example, at Fulstow, just north of Louth. In March 1818 John Bradley, surveyor to the Fulstow Enclosure Commissioners, was sending details of the Fulstow Enclosure Act and the allotments made to Banks (10).

Banks' agent at Revesby, John Parkinson of Asgarby, was an

enclosure expert and he was associated with many enclosures in Lincolnshire, from Welton le Wold in 1770 to Tealby and Coleby in 1806. So, it can be said that Banks' influence, or that of his agent, extended into the northern half of the county (11).

Although Sir Joseph published surprisingly little (12), he did write articles and long memoranda on particular topics which did not find their way to the publishers. Handwritten accounts exist, such as notes on oak bark and the tanning trade (13), American corn pests (14) and 'Thoughts on the subject of plucking geese in the Fens' (15). In 1781 he did publish a pamphlet which made up for the brevity of the work in its title,

'Considerations on the Present State of the Wool Trade, the Laws made concerning that Article, and how far the same are consistant with true Policy and the real Interest of the State.' (16)

The breeding of sheep, particularly for wool, was a subject to which he devoted much time. Many Lincolnshire farmers were interested in sheep breeding (17) and Banks' correspondence reveals that, for instance, in 1802 George Chaplin, a landowner of Tathwell near Louth, was writing to inform him that he hoped to go to Coke's sheep show at Holkham (18). Banks played an important part in the efforts to produce fine clothing wool in the country by the introduction of Merino rams and, in 1793, the celebrated Major John Cartwright, who farmed at Brothertoft (19), said that the best ram he ever

used was a half-Lincolnshire and half-Spanish one which Banks bred and gave to the Rev. Edward Walls.

Banks and his wife were prominent among a group of the local gentry who promoted schemes for manufacturing wool in the county. One such enterprise involved the establishment of schools of industry to employ young people in the villages and so reduced the burden on the Poor Rate (20). Another was the setting up of proper factories. Unfortunately, little is known about them as there are few contemporary descriptions. Nevertheless, Sir Joseph was involved from the very beginning.

The promotional organisation was the 'Society for Promotion of Industry' and, at a meeting in October 1783, the first steps were taken to establish a woollen mill at Louth,

'... for the spinning of Long and Course (sic) wool by a machine ...' (21)

Banks' connection with the Royal Society and the Lunar Society were of use as he would have been the catalyst by which a response was obtained entitled,

'Proposal of Mr. Arkwright for conditions upon which he would undertake to invent a machine for spinning wool.' (22)

Sir Joseph, together with Robert Vyner, MP for Lincoln County, were appointed trustees to the mill and Banks made a contribution of £100 towards it (23).

The mill began operating in 1784, producing woollen fabric, or 'stuff', and it is known that a Robert Brumfrit, a Leeds' carpet manufacturer, leased the spinning machinery in 1787 (24). However, the mill ceased working in 1792 (25). In fact, all these projects to promote the manufacture of woollen goods in Lincolnshire had a rather short life, the decline beginning in the early 1790's. The primary opposition to the Society's aims came from those landowners and farmers who changed from pasture to tillage in order to take advantage of the rising grain prices. Even so, one aspect of the work which did survive was the annual 'Stuff Ball', founded in 1785 at Sleaford. The following year it moved to Alford and, later, to Lincoln.

In 1789 Lady Banks was the patroness of the Ball which was held at the Lincoln Assembly Rooms. It was not only the ladies who wore stuff on this occasion; Sir Joseph went in a full suit of it (26). The Ball became a key event in the county's social calendar and a very exclusive one.

A month before the Stuff Ball was Lincoln 'Race Week' and Sir Joseph was a regular subscriber to the 'Ladies' Plate', making an annual donation of 5 guineas (27). The other subscribers make a list of the local county gentry, including the Duke of Rutland, the Earl of Scarborough and Lords Monson and Brownlow representing the aristocracy, Sir Thomas Whichcote, Lewis Dymoke - the King's 'Champion' and Richard Ellison representing the monied, landowning class and Sir John Thorold, Sir Peter Burnell and John Fenton-Cawthorne representing the Parliamentary members. It was in such a gathering that the introductions, personal connections and

friendships were made and cemented that Sir Joseph used when he was involved in the promotion and development of the local waterways. It is likely that he would have had a much more difficult time in such promotions if he had been an absentee landlord, spending much of his life in London and visiting his country estates only rarely.

During 'Race Week' Banks entertained his guests at the 'White Hart', Lincoln. While there he settled financial accounts, such as that with William Brooke who posted the 'Lincolnshire, Rutland and Stamford Mercury', the county newspaper, to Banks in London or Revesby, depending on where he was staying (28). Also, he would renew his subscription to the Book Room (29).

Enclosure, drainage, stock breeding: all these were of great interest to Banks and so it was natural for him to be concerned in other matters which went hand-in-hand with them.

Communications were of vital importance and he was active in promoting a wool quay at Wainfleet, a port just north of Boston, in 1790 (30). By 1793 he had shares in the Grimsby Turnpike and in the early years of the 19th. century his holdings extended to include, for example, the Horncastle and Witham Navigations and he was Chairman of the Fosdike (River Welland) Bridge Committee. As befitted the district's most influential figure he was an important supporter of the Horncastle Navigation and its 'President' for twenty-seven years (31).

Sir Joseph was never parochial as far as communications were concerned. In the late 1780's, for example, he headed the list of the county gentry who gave handsomely to improve

the Pottergate-Lindum road at Lincoln (32), which was completed in 1789. He also took a keen interest in the development of the canal network in England and Wales but more especially in the Midland canals - those which would be of most benefit to the economy of Lincolnshire (see Chapter 3).

It was in the autumn that Sir Joseph came to Revesby. His busy life kept him away for much of the year but autumn brought him home to his estate for the harvest, the Revesby 'Feast', Lincoln Races and public works and private estate business. Indeed, as Sir Joseph advanced in age and prestige he came to dominate the county and there seems to have been little business which could, or would, have been undertaken without him.

When he travelled from London to Revesby the locals must have been amazed at the sight of his luggage passing along the road through Boston, Sibsey and Stickney. There was an enormous amount of it for he had not only a vast quantity of baggage, as would be expected of any 18th. century landowner and two ladies, his wife and sister, but he also travelled with new inventions, books, files and letters, blank volumes for pressing flowers and all the other requisites of a man who was engaged in a dozen activities at once.

Banks was a very efficient and thorough estate manager. Arthur Young, the Secretary of the Board of Agriculture, was a great friend and admirer and he has left a description of Sir Joseph's estate office.

'In the management of a great estate, I remarked a circumstance at Reevesby, the use of which I experienced in a multitude of instances. The liberality of Sir Joseph Banks opened every document for my inspection; and admiring the singular facility with which he laid his hand on papers, whatever the subject may be, I could not but remark the method that proved of such sovereign efficiency to prevent confusion. His office, of two rooms, is contained in the space of thirty feet by sixteen; there is a brick partition between, with an iron plated door, so that the room in which a fire is always burning, might be burnt down without affecting the inner one; where he has 156 drawers ... the inside being thirteen inches wide by eight broad, and five and a half deep, all numbered. There is a catalogue of names and subjects, and a list of every paper in every drawer; so that whether the inquiry concerns a man, or a drainage, or an enclosure, or a farm, or a wood, the request was scarcely named before a mass of information was in a moment before me. Fixed tables are before the windows (to the south), on which are spread maps, plans, &c. commodiously, and these labelled, are arranged against the wall. The first room contains desks, tables, and bookcase, with measures, levels, &c. and a wooden case which when open forms a bookcase, and joining in

the centre by hinges, when closed forms a package ready for a carrier's waggon, containing forty folio paper-cases in the form of books: a repository of such papers as are wanted equally in town and country. Such an apartment, and such an apparatus, must be of incomparable use in the management of any great estate: or, indeed, of any considerable business.' (33)

John Byng, later Viscount Torrington, was another visitor to Revesby but was far less impressed. He passed through the estate in 1791 and he described it thus,

'The park is flat, dismal and unimproved; the house mean and uncomfortable, with a horse-pond in front, with no gardens or comforts, but when a man sets himself up for a wild eccentric character and (having a great estate with the comforts of England at command) can voyage to Otaheite and can reside in a corner house in Soho Square, of course his country seat will be a filthy and neglected spot.' (34)

Revesby 'Feast' or 'Fair' was held on the second Monday after old Michaelmas Day and it was one of the most noted pleasure fairs in the county. At it the Revesby Abbey ale was drunk and a bullock killed and eaten. On 20 October 1783 Banks wrote,

'This is the day of our fair when according to immemorial custom I am to feed and make drunk everyone who chooses to come, which will cost me in beef and ale near 20 pounds, and I am sure there is no quiet in the house all day.' (35)

It is interesting that he should have used the word 'immemorial' as the hospitality at Revesby was initiated by him.

The fame of the Revesby 'Feast' was almost equalled by that of Sir Joseph's fishing parties on the Witham although, of course, a much smaller number of people were involved and they were drawn from a different social class, which included local gentry and the clergy (36). Of one such expedition Sir Joseph wrote,

'We drew ten miles of fresh water, and in four days caught seventeen hundred-weight of fish; dining always from twenty to thirty masters and mistresses, with servants and attendants, on the fish we had caught, dressed at fires made on the bank: and when we had done we had not ten pound of fish left.' (37)

The fishing parties assembled on a tented, horse-drawn barge, sometimes with a band on board (38). As was his custom, Sir Joseph kept some records of the quantities and types of fish landed - for example, on 6 September 1788 a party of 25 ate 3.5 lbs. of pike; 32 lbs of perch, 5.75 lbs

of eels; 18.5 lbs of salmon and 0.5 lbs of flounders.

Some of these expeditions were recorded by Sir Joseph's sister, Sarah Sophia, in two fishery books and she likewise noted details of another of their mutual interests, archery.

Banks was an enlightened and progressive landlord and Arthur Young seems to have admired everything he did, even noting how 'very carefully' Banks' woods had been,

'... managed since 1727, in a rotation of
twenty-three years ...' (39)

Rent Day at Revesby was a time of great festivity and hospitality. David Hurn, a farmer at Holbeach Fen, summed up what he, and many others, felt about the man known affectionately as 'Cousin Jo'. Hurn composed a series of poems about rural life and one concerned this occasion (40). It begins,

'Right Honourable Sir, vouchsafe to hear
Although the bard's rough numbers wound your ear,
Nor with sharp criticism ere refuse
The grateful tribute of the rustic muse ...'

Hurn describes the yearly round of fenland farming, and continues,

'In pleasing scenes like these Novembers spent,
Each tenant now provides his half-year's rent,
The noisy flail in every barn is heard

And winnowed grain for market is prepared.
 See, daily travelling the wheel-worn road
 Unnumbered waggons groan beneath their load.
 To market thus convey the precious spoil
 The farmer reaps reward for all his toil,
 With cash provided with his heart content
 If one year will but pay another's rent.
 The day arrives; the tenants all appear,
 To pay their half-year's rent and taste good cheer,
 And drink Sir J --- 's health in good, strong beer!
 While round the festive board the tankard clanks
 They toast, my Lady and Sir J --- B --- ,
 The tenants thus relieved with grateful cheer,
 November's gloom begins to disappear,
 With smiling features homeward take their way,
 While six months' toil again brings on Rent Day.
 Thus, Sir, your tenants yearly toil and pay,
 While you mysterious Nature's face survey:
 Of herb or insect you explain the laws,
 And fill great Newton's chair with great applause ...'

While history does not record what Sir Joseph thought of the poem (41) he is known to have had definite views on tenant farmers. He believed that a landlord should be like a patriarch to his tenants and also that he should live amongst them, sharing their life. He believed he should not distress them by charging exorbitant rents but also he believed that the landlord should not allow them to become rich enough to make their sons into what he termed, 'consumers of the

produce of the earth', by which he meant lawyers, parsons and doctors, in other words, they should not be allowed to rise above their 'station'. These professions, Banks thought, should be filled by the younger branches of the gentry families. However, in this he was forgetting that his own great-grandfather had been an attorney.

Arthur Young recorded that,

'In the manor of Revesby all enclosed, are 62 farms for the rental of 1397L being the rent for 3401 acres. This vast division of farms arises from a determination in Sir Joseph Banks not to distress the people by throwing them together, by which he loses much in rental, and sees a property illcultivated; and which must be the case, till by deaths he can gradually, but very slowly, improve it ...' (42)

Young also stated that,

'Sir Joseph has no objection to granting leases; but he is never asked for them. Seeing a tenant of his improving his land by hollow-draining, he gave him a lease of 21 years, as a reward and encouragement ...' (43)

In 1800 the bad harvest and the resulting corn shortage brought strange food to Revesby as Banks shipped rice to Boston and arranged with his servant, James Roberts (44), for

its distribution amongst his tenants. He also sent a recipe to all his tenants to tell them how to cook it (45).

Sir Joseph was keenly interested in inventions of all kinds and especially of agricultural machinery. In 1792, for example, Charles Chaplin of Tathwell, wrote to him describing a machine for malting barley. Chaplin wanted Banks' advice about applying for a patent and asked him to bring the machine to the notice of any agricultural society and any others who might be interested. By June, Banks was involved with a Mr. Marsh, the machine's inventor, who had applied for the patent (46).

His interest in drainage and inventions is seen in the same year in one of the numerous newspaper cuttings contained in his papers concerning this topic,

'A very ingenious invention has been made by a person at Beverley in Yorkshire, for bottom-scouring inland Navigations. to be worked by six men only, and to remove a ton of sludge from the bottom at one time.' (47)

The position which Banks occupied in Lincolnshire can be judged not only from his acknowledged status as the authority to be consulted on almost any topic. His inclusion on the subscription list for the Lincoln Races' 'Ladies' Plate' has already been mentioned and, in 1794, the social grading of the county could be seen once again in the amount subscribed for its defence. The Duke of Ancaster and Lord Brownlow (of Belton House, near Grantham) each donated £500, Charles

Pelham (Lord Yarborough's heir) and Sir John Thorold, the MP's for the county, gave £500 and £300 respectively and next came Banks, Sir Gilbert Heathcote and Sir Peter Burrell with £300 each.

Banks took little part in politics, either nationally or locally, and in view of his many other activities it is not surprising that he did not choose to become embroiled in this time-consuming pursuit. He was conservative in his opinions and supported the Tory interest in Boston. However, his name was used in the promotion of Daniel Watherston as Boston's MP in the election of 1784 (48).

In county elections he regretted the introduction of partisan politics because, like most country gentlemen, he preferred to avoid contests and remain, if possible, on good terms with his neighbours (49).

If he did not take a lead in local political matters he could not be accused of neglecting his duties elsewhere. He was never a mere figurehead. He was, for example, patron of the Lincolnshire Medical Benevolent Society. In 1804 the Society commissioned Dr. Edward Harrison of Horncastle to investigate medical practice in the county. The first major step to improve the status of the country doctor came in 1815 under an Act of Parliament which brought about the examination and licensing of apothecaries. This was due mainly to the activities of the Lincolnshire Medical Benevolent Society and the influence of Banks (50).

He had been interested in medical matters for a long time, possibly as a consequence of observing Cook's results with dietary deficiencies and their remedy on board the

'Endeavour'. In 1789 the Horncastle Dispensary, or clinic, had been founded and Banks had initiated its first meeting (51). He became its first president and his Scrivelsby and Hagnaby neighbours, Lewis Dymoke (King's 'Champion') and Thomas Coltman were vice-presidents. It was very much a pioneering effort because other dispensaries were founded much later, for example, Louth in 1803. Banks was also one of the vice-presidents of the Lincoln County Hospital Charity (52).

The administration of the County Assembly Rooms at Lincoln demanded some of Sir Joseph's time. In 1790 they were broken into and much property was damaged, including a painting which he had presented. Banks held the office of Treasurer, resigning in September 1800 (53).

Despite his deep interest in all Lincolnshire matters one office he seems to have avoided for as long as possible was the highest office of all that was available to him - that of High Sheriff. This was an onerous and costly office which could not be avoided for ever even by him and he had to take it in 1794.

When Banks took office the announcement of the new High Sheriff had already been postponed for a week in order that representations could be made to him to accept it (54). There was a war on and the position was an unwelcome one because of the amount of time he would have to devote to it but, once having agreed, he threw himself wholeheartedly into the work and scores of letters and memoranda resulted.

At the Lent Assizes of 1794 Banks placed before the Grand

Jury matters relating to the defence of the realm. The Grand Jury resolved that landed proprietors should, at their own expense, make provision for the defence of the county and that local people should learn the use of arms and place themselves under the command of unpaid officers. Sir Joseph wrote about this to Richard Clitherow, the Clerk to the Horncastle Navigation, in April 1794,

'You will soon I hope be calld upon to subscribe for the general defence of the County & the Kingdom as was done at Lincoln by the Grand Jury ... [The] Justices [are requested] to order Meetings to be calld in such Towns as they think proper[.] this was thought a more easy Method of calling people together than a County Meeting which if it ought to be had at least should be postponed till the Roads are better than they now are ...' (55).

Instead of the County Meeting there was a meeting in London of the nobility and gentry, presided over by the Lord Lieutenant, the Duke of Ancaster. At this £4,000 was subscribed. Those who remained in Lincolnshire objected to this and Banks eventually felt obliged to hold the County Meeting where it was resolved to raise bodies of cavalry and companies of infantry to man the batteries on the sea coast.

In April 1793 Sir Joseph was appointed Lieutenant Colonel of the Lindsey Battalion of the Supplementary Militia (56). The fears of French landings and discontent amongst the land

labourers were very real indeed and riots occurred in the county in 1796 (57).

Banks' reluctance to take office as High Sheriff cannot be taken to indicate any lack of interest on his part in administration. For example, in 1788 the ad. hoc. meetings of the Assizes were replaced by the more formal meeting of the Justices of the three divisions of Lincolnshire (Holland, Kesteven and Lindsey) during Lincoln Race Week, in September. The change was due largely to Banks' recommendation as during Race Week all 'Society' was in Lincoln.

For many men in his position a participation in county affairs would have been sufficient but he was always willing to take part in purely local occasions. His involvement in the Revesby 'Feast' has been mentioned and he was also concerned with that at Lincoln and his proximity to Horncastle and Boston made certain that he had influence in those places also. His work for the Horncastle Dispensary has been noted and he was, by far, the most important figure around that town and not only because he was the greatest landowner in it. He had a town house there, which still stands, and he leased the Manor of Horncastle from the Bishops of Carlisle. When a National School was being established in 1813 he gave the committee a plot of land near the manor house as a site for the school and a number of trees from his estate with which to build it. The excess wood was sold at auction and about £64 was raised for the school funds (58).

As the most influential man in the fens he loomed very large in Boston. In 1809 he was appointed Recorder in place

of the lately deceased Duke of Ancaster. On several occasions Boston asked him to stand for Parliament but he always refused - he could do far more for the county in London and at Court than could any single Member of Parliament.

In 1783 he took an interest when Boston Corporation bored for water in the town and an account of the observed strata was communicated to him by the engineer (59) and then by Sir Joseph to 'the Royal Society' (60). When the question of conveying water by pipeline to Boston from Hagnaby was considered Sir Joseph was consulted. He thought the plan impracticable as there was insufficient fall (61). He was also consulted when Boston harbour was deepened and restored (62).

He took an interest in activities in Spalding. He was a member of the Spalding Gentlemen's Society, an antiquarian, literary and scientific society founded in 1710. It is the second oldest such institution in this country, only the Royal Society being older.

Louth came within his orbit of influence. Not only the establishment of the woollen mill took his attention but also the Louth Navigation (63).

In view of what is known about him it would be strange if he did not figure somewhere in the history of Lincolnshire's most famous building, Lincoln Cathedral. His name is remembered here but for a now-unknown reason - the view from the gallery at the west end is called 'Banks' View'.

He had a considerable number of wash and line drawings made for the Dean and Chapter by the Swiss artist, Samuel Hieronymus Grimm, and they include one of Banks going up a

ladder to explore an upper dungeon on the north side of the north-west tower (64).

The Dean of Lincoln, Sir Richard Kaye was, like Banks, a Fellow of the Society of Antiquaries and Banks was frequently alarmed at activities at the cathedral. In the 1780's, for example, he complained that the repairing of the building was damaging the old monuments.

When he was in Lincoln for the Races in 1782 he found that the tomb of Bishop Grossteste had been opened for the antiquary, Richard Gough (1735-1809). Banks persuaded John Gordon (1725-1793), the Precentor, to open it again and he took details and had drawings made. At a later date he and the Dean opened the tomb of the so-called 'Little St. Hugh' and they found a boy's skeleton inside (65).

Archaeology was another of Sir Joseph's pursuits. When the River Witham was being cleaned in 1788 he advertised in the local newspaper for discoveries of weapons and utensils (66). He made manuscript notes on his collection but never published them. In 1796 he passed over a number of swords and other relics to Dr. George Pearson M.D. FRS (1751-1821) in order that the metal could be analysed. Here is one of the earliest examples of the scientific analysis of antiquities. Unfortunately, this resulted in the complete destruction of the items!

One of the most interesting Witham finds was the 'Kirkstead Candlesticks' which were probably discovered in the late 1780's at Kirkstead. Banks exhibited them at the Society of Antiquaries, at which place they have been rediscovered recently.

In 1794 he read a paper to the Royal Society on a Roman stone cyst containing a glass urn which had been found at Ashby Puerorum (67).

There can be little doubt that Banks' social position was a distinct advantage to him in his archaeological activities. His fellow gentry knew of his hobby and were likely to correspond with him about finds on their land. He also seems to have had an agent in Lincoln buying for him, a Mrs. Firth, with whom he settled every Lincoln 'Race Week' (68). When Roman urns were found south of Horncastle one came into his collection and weapons found at Friskney were also examined by him (69). This examination involved a comparison with those he had noted as being used by the natives of the Pacific, another early example of comparative anthropology (70).

At some time before 1810 he had his collection of antiquities from the Witham and elsewhere removed from Revesby and placed at the eastern end of the cathedral library. They are now in the Lincoln City Museum.

One biographer of Banks has stated,

'... The character which Banks has left behind him is that of a munificent patron of science rather than an actual worker ... His collections were freely accessible to all scientific men of every nation ...' (71)

What was true of his scientific collections, kept mainly in London and Isleworth, seems to have been true also of his

local archaeological and topographical material. He was in a position to be of great use to all, especially those interested in agriculture, science and antiquarian pursuits.

As with all his interests he corresponded with many of like mind and antiquarians were no exception. In 1799 he wrote to Richard Gough about his collection of maps, prints and engraved portraits,

'... it is now become a valuable mass of material which will be of use if either myself or any other person should undertake a history of the county ...' (72)

One act of Sir Joseph's that has ensured the preservation of his memory in the history of Lincolnshire was the employment of the artist, Claude Nattes, who worked in the county between 1789 and 1797. He was paid travelling expenses of half a guinea a day and charges for finishing his drawings on his return to London. Banks calculated that the Nattes' sketches had cost him £2 each and four volumes of these represent some 300 churches, many houses and other ancient buildings and they number some 700 drawings altogether (73).

By the end of his life in Lincolnshire, Sir Joseph had formed the nucleus of a county museum, an archive collection and, to a lesser extent, a portrait gallery, all housed at Revesby Abbey. In addition he seems to have performed the functions later carried out by agricultural societies, archaeological societies and naturalists' clubs and he was

also the chairman of water and highways' authorities.

CHAPTER THREE

BANKS' INTEREST IN WATERWAYS OUTSIDE LINCOLNSHIRE

Joseph Banks' awareness of the problems and importance of water in and to a landscape and local economy would have been implanted at an early age. The facilities provided by a flooded fenland had been a source of adolescent entertainment for fishing and botanising whenever he came to Lincolnshire during school and university holidays and, at every turn, the wastes would have been seen stretching away to the horizon.

Joseph's grandfather, Joseph II, had been an early promoter in the attempts to drain some of this land, having encouraged the scheme to drain Holland Fen, a 22,000 acre tract to the west of Boston, and had been an active supporter of the project to tame the River Witham which culminated in the 1762 'Witham Act' (1). These and other drainage works were taking place while the young Joseph was growing up and would have been seen by him as a natural and accepted part of his environment.

The 'Witham Act' was passed when he was 19 years old and Joseph's father had died in the August of the previous year, 1761. Having inherited a major estate and taken his place amongst the landed gentry of that time, he might well have chosen to live off the earnings of his land as an absentee

landlord. This he declined to do and, instead, took part in all the activities of his local area. Thus, by the mid 1760's Joseph's horizons were widening and while things botanical occupied the most important place in his academic study, his knowledge of all aspects of the life of his times was growing. It would be expected, therefore, that his writings of this early period should be primarily of botanical observations but included would be reports and comments about the environment and landscape generally and, particularly, accounts and comparisons of those aspects with which he had been familiar for many years in Lincolnshire. It is not surprising, then, that Joseph's journals of journeys he made to various parts of the country at that time contain brief observations and recordings of the waterways, either natural or canalised, which he saw.

Joseph returned from his first overseas trip, that to Newfoundland and Labrador, in November 1766. In 1767, when he was 24, he made two journeys from London, first to the Bristol area (2) and then to Wales and north-west England (3). Both journeys provided opportunities which would stand him in such good stead in the following year when, unbeknown at the time of these two trips, he would be embarking on the remarkable voyage of the 'Endeavour'.

The earliest record of Banks' writing about waterways was made on 24 May 1767 when he was residing at Chepstow, overlooking the River Wye, about 2 miles upstream from the confluence with the Severn Estuary. He must have noticed the similarity of this small river port to Boston, not only with regard to its physical location but also to its trade. Joseph

said that,

'... indeed it is wonderful that a town so conveniently situated for trade should be so much neglected. I believe there are few places have so extensive an inland navigation, as it has the command of the Wye, which is navigable as high as the Hay, and the Severn. In the Wye, close under the town, the Largest ships may lie with ease, as there is 23 feet at low water and soft mud on the town side where ships may be unloaded immediately on shore ...'

When writing of this type of situation Joseph must have been reminded of the advantages of the provision of a clear waterway for the port of Boston which, it was hoped, would result from the construction of the Grand Sluice and which had been opened only the previous October. The faster flow of water induced by the sluice, it was envisaged, would scour the 'Haven' (the Witham downstream from Boston), so clearing the silt accumulations and leaving the shipping passage open. The situation he had known at Boston for years he would have recognised when he wrote that,

'... at Bristol a ship of 300 tons is obliged to discharge half her lading at Kingroad, which must be brought up [to Chepstow] in lighters at great expense ...'

On the evening of 24 May Joseph went by rowing boat to view the remains of Tintern Abbey and, once again, he was reminded of the Fens for, on the way,

'... the Banks of the River everywhere most Beautifull, especially under Pearcefeild [Piercefield], where you look upon Mr. Morrices improvements ...'

Valentine Morris was a promoter of turnpike roads in the area and he had once been summoned to the House of Commons on a matter regarding turnpikes. He had been asked what roads there were in Monmouthshire, to which he had replied in the negative and when asked how people travelled he had said, '... in ditches ...'. Such was the principal mode of travel in the south of Lincolnshire at this time.

Just a week later Joseph was passing through Bridgwater on his way to Taunton and he remarked upon the navigability of the River Parrett,

'... a pretty good town with a River capable of Bringing up vessels of 2-300 tons, quite to the Bridge ...'

He stayed that night at Hestercombe, about 4 miles from Taunton, at the house of a Mr. Bramfield and the following morning, 2 June he,

'... walkd out to see the town of Taunton, found

it a Large town situate on a small [river, the
Tone] navigable for barges quite up to the town
...'

From then until he set out for a return to London on 20 June he made no further mention of navigable waterways seen, rather his journal is concerned almost entirely with botanical matters.

In the winter of 1767 Joseph embarked on the second of his trips, this time travelling to Wales and north-west England and, in particular, the counties of Lancashire and Cheshire.

He journeyed from London in early November and on the 20th. was on the Dee estuary making observations on the land reclamation that had recently taken place there,

'... There have been great improvements of Late by banking out the tide from the marshes of the river dee but I will say nothing of them as in my return I hope for an opportunity of riding over them & getting a thorough Idea of them ...'

The next day he did ride over the marshes on his way to Holywell and, in his journal, he compared this landscape with that of his home county.

So, his travels continued for a further month until the approach of Christmas and, with the journal entry,

'... Set out for Worsley with Mr. Gilbert that I might see the duke of Bridgewaters navigation

...’ (4)

began a few days of intense canal observation. These recordings are of great interest today as Sir Joseph set down within them one the the earliest eye-witness accounts of canals under construction.

On his journey to Worsley he saw the Harecastle Tunnel, on the Trent and Mersey Canal, just prior to its opening. He expressed his doubts about the quality of the construction saying,

’... From hence [Burslem] went to the place where the famous Trunk or Staffordshire navigation is to be opened through an immense hill Called Hare Castle an mile & 3/4 in Length the drift is Carried about 100 yards is well archd & nobly Sizd but their mortar is so soft & seems to have so little care taken in making it that I cannot help having my fears of accidents which may befall it when it Comes to bear a large weight of hill ...’ (5)

This observation, made at the beginning of the tunnel’s working life was reinforced half a century later when John Rennie, commenting two months after Banks’ death, told the proprietors of the Trent and Mersey of the poor workmanship here and that the whole structure had been made with bad mortar (6).

The night of 18 December was spent in Knutsford, in

Cheshire, and the following morning he came upon the Bridgewater Navigation at Dunham, the seat of Lady Stamford. He was so impressed with what he saw that he wrote a full account of his visit, including in it a description of the building of an embankment.

Joseph had been greatly impressed by what he had seen and it took a few days for him to digest all the information he had received before he was ready to commit his thoughts about the Bridgewater to paper. In the meantime he saw the Ashley quarries near Wigan,

'... where a Lime Calld Sutton Lime (much used in the dukes navigation & famous for its property of Setting quick under water) is raised ...' (7)

Banks noted that this lime cost the Duke of Bridgewater 8d. a Winchester bushel.

Two days later, on Christmas Eve, he was back on the Bridgewater and walking beside its frozen course. The ice lay an inch thick upon the surface and he watched, and noted, the way in which it was broken in order to allow the passage of vessels (8).

He remained in the Bridgewater area for almost two weeks and on the last day of 1767 he summarised his impressions of this prolonged view in his journal.

When he saw it, 21 miles of the 30 from Worsley to Runcorn and the branch to Manchester had been completed. He had seen how the digging had been carried out, how stonework was laid

had learned much about canal construction in general for he had been in the hands of a good instructor. He said,

'... we must acknowledge ourselves indebted ... to ... Mr. Jno. Gilbert whose most indefatigable industry himself overlooking every part & trusting scarce the smallest thing to be done except under his own Eye I myself have been witness of ...' (9)

He was most impressed with the energy and effort which was being put into the finishing of the works in the shortest possible time despite the delays caused by the freezing weather. He was intrigued by methods of doing things which he had never seen before, such as using a tunnel to raise goods vertically.

'... At Castle Feild in Manchester the Canal is driven underground in a tunnel [...] upon this a pit is sunk by which means coals are drawn up to the top of a hill & loaded into Carts which can go & come so much oftener as they have not the hill to go up ...' (10)

This simple contrivance must have caught Banks' imagination for he then proceeded to describe the ropeworks, gearing and operation of the crane used.

In concluding his survey, Joseph was not lacking in his praise for James Brindley, the resident engineer,

'... These & many more as usefull & ingenious inventions were thought of & executed by Mr. Brindley who also did most of the Engineering work of the Canal [...] he is a man of no Education but of Extremely strong natural Parts [...] he was recommended to the duke by Mr. Gilbert who found him in Staffordshire where he was only famous for being the Best Millwright in the Countrey ...'

However, in this appreciation of Brindley's contribution to the engineering works Banks was mistaken - it was Gilbert who was the genius behind the project (11).

During the remainder of his tour in this part of England Banks visited only one other canal. On 10 January 1768 he went from Bishton,

'... to the navigation which Lord Gower has made for five miles (upon the same principle as the duke of Bridgewater) for the Conveyence of his Coals & Lime ...' (12).

This was the Donnington Wood Canal and Banks had come to see it probably as Lord Gower was the Duke of Bridgewater's brother-in-law (13) and, most likely, he had an introduction. However, little information about this waterway is contained in Banks' journal.

The travels ended with Joseph's return to London on 29

January 1768 and also concluded what can be termed the first 'phase' of his involvement with canals. He was nearly 25 and had journeyed over two large areas of England and Wales, observing and recording all manner of natural and man-made phenomena. Canals and navigations were included and their construction methods had been carefully noted. The advantages of canals, the problems of water supply, and so on, would have been discussed at length with John Gilbert and this information talked and thought about with reference to his Lincolnshire estates and the south Lincolnshire area generally. During this 'phase' Banks was learning the rudiments of canal construction on the spot, although what he was gaining was practical rather than theoretical knowledge.

It had been his intention to make a journey to Sweden and Lapland following his return from north-west England, the purpose of which was to travel in the footsteps of his botanical mentor, Carl Linnaeus, but this was not to be. On 12 November 1767, while he was still in the region of the Dee estuary, the Royal Society had drawn-up its 'memorial' to be presented to the king which was the first step in what was to become Cook's and Banks' epic voyage to Australia. When Banks heard of the planned expedition is not known, neither when the decision was made to abandon the notion of visiting Scandinavia and, instead, to offer himself to the Royal Society to make the journey to the antipodes. However, by early April 1768 he had been accepted and his place aboard, and in history, secured (14).

From 20 August 1768, when he arrived at Plymouth with Dr. Solander, until 15 July 1771, when the 'Endeavour' anchored

safely in the 'Downs', Banks' mind was occupied with events far removed from the tranquillity of his flooded fenlands and marshes. Even so, his thoughts must have strayed in occasional quiet moments to what he had seen on his two recent trips, to what could be accomplished in the Fens and to what agricultural and commercial prosperity could be achieved if drainage could be undertaken successfully.

With his return in mid-1771, Banks entered the second 'phase' of his canal involvement, although it was some while before he became active - there were more pressing things to do. In 1772 he journeyed to Iceland and in 1773 became the 'Scientific Adviser' to the Royal Gardens at Kew and made a trip to the Low Countries. In this period the only document which has appeared relating to canals is a letter to Banks from John Sneyd (1734-1809), a landowner and botanist, in which Sneyd described the purpose of a branch canal from the Trent and Mersey's Caldon branch to Leek and included details of an inclined plane (15).

In 1778 he was appointed President of the Royal Society and this put him at the centre of the British scientific community. He was now in touch with everything which was presented for discussion or opinion to the Society and he showed a great interest in anything connected with waterways and a general awareness of the future importance of canals and there followed a succession of waterways items which showed this to advantage.

On the Bridgewater Banks had seen and studied the practical aspects of canal construction but his knowledge of theoretical matters, such as the nature of water flow, was

very limited. It is probably from a presentation by a communicating Fellow of the Society that this deficiency began to be made good and provided Banks with the necessary expertise to understand fully the problems involved with canal building and to be able to argue and question canal engineers and surveyors on technical matters when the south Lincolnshire navigations were being made.

Banks' education in theory possibly began with a letter from Brussels in February 1779, sent by the Abbe Theodore Augustin Mann (1735-1809) (16). In addition to being an FRS he was a member of the Imperial and Royal Academy of Sciences at Brussels. This letter covered the enclosure of a 'Treatise on Rivers and Canals' (17) which he wanted Banks to present to the Society. Banks 'Read' this on 24 June 1779 (18) at which time it was well received (19).

The treatise covered many aspects of the laws of hydrology as they then applied to rivers and canals and Banks would not have failed to grasp this opportunity to increase his understanding. Knowledge of his interest in this had spread to the Continent as Mann sent his work to Banks personally, knowing that it would receive favourable attention (20).

Mann summarised his reasons for writing the treatise early in the work, expressing sentiments with which Banks would have concurred,

'... The great number of extensive and magnificent Canals, which have been cut through almost every part of England of late Years, for

the use of internal Navigation, and which do honour to the public spirit of the Nation, merit to be considered in a Scientific, as well as a Commercial light ...' (21)

Thus, by the middle of 1779 Banks probably possessed a practical experience and a growing theoretical knowledge which would enable him to make such a valuable contribution to the Lincolnshire waterways of the future, and this future was not far away.

In the early 1770's an attempt had been made to make the River Slea navigable. This river, also called 'Kyme Eau' for part of its course, flows from some miles west of Sleaford, in the then-Kesteven part of Lincolnshire, through that town to join the River Witham at Chapel Hill. Nothing came of this scheme but the project was kept alive and Banks gave his support to a renewed attempt for an enabling Act in 1782. He took only a small part and the attempt was unsuccessful, but his advice had been sought (22)

In that same year a foreign canal was brought to his attention in a letter from the astronomer, Thomas Bugge, FRS (1740-1815), writing from Copenhagen. Perhaps Banks had mentioned his canal interest to Bugge for he was told that a 'Mr. Topping' would inform him about,

'... the canal in Holsatia ...' (23)

This would have been an account of the stage of construction reached in the building of the Kiel Canal, as it

is now called, in the south Danish province of Holstein. In this project the River Eider was canalised and then continued by a canal to Kiel and the whole was completed in 1784 (24).

At this time Sir Joseph was not receiving reports only of canals in the course of promotion or construction. His visit to the Bridgewater had shown him the importance of the new, mechanical devices being employed on the canals and his correspondents tried to keep him abreast of the most recent advances in the field and also of other aspects which they knew would be of interest.

An example of the first occurs in a printed document which he received about mid-1783 (25). This is an account of a dredging machine which had been invented by the brothers F and A. Eckhardt in the Netherlands. The advantages and disadvantages were fully discussed and the report on its operation made by the Commissioners of Correspondence for the economic branch of the Society of Arts at Haarlem was attached (26).

An example of the second type is found in a letter of 1785 from John Rennie to Banks (27). Banks had heard somewhere about a different type of lock and he had asked Rennie to find out about it for him. Rennie found that the lock had been invented by a Kalmuk Tartar and he also discovered an account of its operation in the journal of the 'Memoires de l'Academie' (28). The lock was to be used on the River Seine in France and involved the employment of two curved sector gates.

British canals continued to hold Banks' attention at this time and this soon was to become a preoccupation. In 1788 the

Gloucestershire historian and antiquary, Samuel Lysons, FRS (1763-1819) informed him of the progress that the Thames and Severn Canal was making and of its expected completion within a year (29) while, in 1791, whilst on a visit to South Wales, the geographer, James Rennell, FRS (1742-1830) thought it important to tell him that the recently-completed Glamorganshire Canal was low in water with only two feet in a tunnel, probably that at Cardiff (30).

Of course, this renewed evidence of concern for the British scene does not mean that Banks was neglecting it throughout the 1780's, just that little has come to light concerning that period. However, from now onwards his attention was drawn increasingly towards the concerns of the Lincolnshire canals and navigations, which he began to promote and support with vigour.

Thus, by the end of the decade the third 'phase' in Sir Joseph's canal concern begins. His apprenticeship in the subject had been served and, by coincidence, the period of Lincolnshire canal growth began at a time when, by social position, knowledge and personal inclination, he was ably-fitted to participate. The part he played in the Lincolnshire scene is dealt with later in this work but all his future activities in connection with those waterways outside the county must be viewed in the light of his primary concern with those of his home district.

With the Witham made navigable to Lincoln from Boston by 1788, with it linked to the Sleaford by 1794 and with an expected link to Horncastle, Banks' 'seat of power' by about 1795, all he did must be seen as a means of developing the

prosperity and trade of that area. From Lincoln the Fossdyke Navigation gave access to the Trent and, thereby, to the canals and navigations of the heartland of the English Midlands and the coalfields of Yorkshire and the North.

In 1791 Banks was in communication with Matthew Boulton, the engineer and a promoter of the Birmingham Canal, to ask him for the plans of the line of the canal (31) and enquired as to the price of the company's shares. Why he needed to know the price is open to conjecture although he may have been considering a purchase or, may be, it was in connection with his promotion of the Horncastle Navigation. Sir Joseph did state, however, that he would welcome copies of the reports and accounts for guidance as he was promoting a canal in Derbyshire. This promotion was probably for the Cromford or the Nottingham Canals with the Banks' family having an estate at Overton, near Ashover, in that county.

It was to the Birmingham Canal that Banks turned for advice when, later, he sought to establish the qualities required of those men who were to be engaged to oversee the construction of the Horncastle Navigation.

When the Horncastle Bill had passed through Parliament (1792) and only the Royal Assent was required for it to become law, the thoughts of the Horncastle committee of management turned towards the building of an efficient management structure for the embryo company and for the most successful forms of construction. It was Sir Joseph whom they approached in their quest, relying on his acquaintance with the canal engineers and managers of the time to obtain from them the answers they needed.

Possibly remembering the help he had been given by Matthew Boulton, he wrote to Samuel Galton, jnr. (32), the chairman of the Birmingham Canal Company who, as a FRS and member of the Lunar Society, was well-known to Sir Joseph.

The specific problems which Banks posed concerned the type of person to engage in the principal offices of the company, both during its construction and after and on certain engineering points, especially the length of lock-pounds.

On receipt of Banks' letter, Galton wrote to two colleagues on the canal management team, William Simpson and John Houghton, the Clerk, and their replies he passed back to Sir Joseph. The statements contained within Galton's letter and those from Simpson and Houghton (33) would have provided him with all the essential information.

The advice given about the type and character of person to be appointed as surveyor during construction, as company clerk and as treasurer, is considered in detail in the section of this work concerned with the Horncastle Navigation. On the general side, Sir Joseph was given long and detailed instructions as to what to be aware of in the person who contracted for the digging of the works. While the removal of earth from the excavations could be left safely to them, as long as they supplied their own implements, it would be most unwise to trust the puddling to them, the general feeling being that they would not do it efficiently. Far better,

'... to have them all constructed by
Confidential and experienced men to be paid

handsomely for their work by the day ...'

Only the best quality bricks should be used and, in constructions to be made of them, together with stone, timber and iron works, daily-paid workmen should be engaged and directed by the resident engineer, not by the contractor. They should be overseen by an experienced workman who, as well as ensuring that only first-class materials were used and top-quality work executed, saw to it that,

'... the workmen did not impose upon the Co. in respect of their wages ...'

Theft of construction materials was a common cause for concern and this warning was passed on to Sir Joseph. In particular he was urged to take care of planks, spades and barrows and that if the company could devise any way of having them provided by the workmen they should do so,

'... for it is a fact that most of the Farmers, Gardeners, Cottagers, Miners, etc. have furnish'd themselves with those articles at the expense of the neighbouring Canals - workmen will take care of their few but the Co. cannot of their No....

Further advice was given about millers with premises lying along the line of the waterway. The continual and common battle between millers and canal operators over the supplies

of water to each was commented upon and a remedy suggested,

'... If You have any fear that Mills below your canal can have an interest in robbing you of your water it will be well to have the Weirs made of Cast Iron ...'

From his writings it is obvious that Galton was trying to be as helpful to Sir Joseph as he could and he requested that he be consulted about any problems which the Horncastle may have and, if he did not know the answer, he would ask those who did (34).

Sir Joseph saw clearly that the success of his local undertakings, such as the Witham, Sleaford, Horncastle and, later, the Witham Navigable Drains, was dependent on those canals outside Lincolnshire with which they linked and also outside his sphere of direct influence. Most certainly in an attempt to keep abreast of developments on those waterways he collected together all manner of documents and map materials which touched upon their history, present trade and solvency.

By an Act of 1699 the River Calder in Yorkshire was to be made navigable from Wakefield to its junction with the River Aire at Castleford and the Aire from Leeds to Castleford, in fact, to Weeland, about 3 1/2 miles above Snaith. The resultant waterway, the Aire and Calder Navigation, became the node of the south Yorkshire canals and, as such, vital to the Lincolnshire navigations. In Sir Joseph's possession were the two original 'cases' for the Aire and Calder, dating back

to the end of the previous century (35), together with John Smeaton's report of 1771, recommending a cut from Haddlesey lock to Gowdall, and William Jessop's of 1772 for a canal from Haddlesey to Selby (36). From this same period Banks had a copy of a map of a cut at Brotherton (37) near Knottingly and the parliamentary case of the proprietors for an Aire and Calder Act of 1774 (38). In 1773 the Leeds and Liverpool Canal Company had promoted a link between Leeds and Selby to rival the Aire and Calder and the pamphlets setting forwards its route and advantages were in Banks' papers (39).

Sir Joseph could not have collected the earliest of these documents himself at the time of their issue and they may have come to him through his father or grandfather but this is unlikely. More credible possibilities are that he collected them piecemeal from the time of his first interest in canals or they may have been sent to him by the Aire and Calder Company in the later 1780's and early 1790's either at his request or upon the initiative of the company in the hope of his support for their position should they require his powerful patronage in London and Parliament at some time in the future.

Meeting the Aire and Calder from the south at Wakefield is the Calder and Hebble Navigation. In the main, Banks' documents relating to this navigation are plans of the route drawn from surveys dating from between 1757 and 1773, conducted by John Smeaton and John Eyes (40). Banks knew Smeaton and it is not impossible that this engineer gave these maps to the President of the Royal Society, of which he was a Fellow. Indeed, many of the later-printed manuscripts

relating to waterways outside Lincolnshire easily could have come from such engineering acquaintances.

The Huddersfield (Narrow) Canal was proposed to join the town of Huddersfield with Ashton-under-Lyne in 1793. At Huddersfield it was linked to the Calder and Hebble at the northern end by Sir John Ramsden's Canal (the Huddersfield Broad Canal), a waterway built under the sanction of the Calder and Hebble (41). Banks would have had an interest in this scheme as it provided an alternative route to Manchester. He had the newspaper cutting of a meeting held on 17 October 1793 at which Benjamin Outram's survey report had been read to the Huddersfield proprietors and the map and observations on the proposed canal (42).

The towns of central Lancashire were served by the Leeds and Liverpool Canal which had been promoted as far back as 1766. Banks had two versions of John Longbotham's plan and report dating from this period (43) as well as that of Joseph Priestley (44).

The first sections of the building of the Leeds and Liverpool, (which included the Douglas Navigation) were not completed until 1792 (45) and, just before they were, Sir Joseph had enquired after information. At some time in 1791 he had been in touch with a Society Fellow, Richard Anthony Salisbury (46), like Banks a botanist, whom he asked to obtain copies of the canal accounts for him. With due regard to the date the reason for this may have been to obtain some guidance on canal construction costs which would give an indication as to the likely additional expenditures involved in building the Horncastle and not specifically mentioned in

William Jessop's survey report on that Navigation. Alternatively, Sir Joseph's enquiry may have been made with a view to investment. Salisbury replied (47) that he had sent him the plan of the canal by coach, but in his letter he does not state whose survey it was. As soon as possible, Salisbury informed Banks, he intended to go to Bradford where the Clerk, Joseph Priestley, lived and request the accounts. Sir Joseph had asked for Salisbury's opinion of these accounts but he was unable to comment for, although a shareholder in the waterway, he knew nothing of the state of the finances. However, what he did provide was a brief progress report - that work was continuing on the construction but the two halves of the waterway, one from Lancashire and the other from Yorkshire, had not met by then. Copies of the accounts from 1783 to 1791 (48), with an 'Abstract of the General State of the Accounts ...', [of 1784] (49), are to be found in Banksian correspondence and they were probably dispatched by Priestley.

The receipt of these papers did not mark the end of Banks' connection with this canal for, in 1792, a dispute arose with the Lancaster Canal over a deviation from the Leeds and Liverpool's proposed line. There was a written agreement between the two concerning this route and the Lancaster claimed that this had been violated. In 1793 the projected diversion was before Parliament and the 'cases' of both parties were collected by Sir Joseph. In all probability this is an example of the 'Parliamentary influence' he was presumed to have and the Leeds and Liverpool were possibly attempting to recruit him to its cause (50).

People outside the individual canal managements also were passing information to him. In 1792 he was in contact with Patrick George Craufurd FRS (d.1804) who was the Assistant General in the Army Pay Office. Banks had asked him for details of the progress of inland navigations generally but Craufurd was unable to give a satisfactory reply (51), as he was finding it difficult to discover the details. He was able to pass on the fact that the Grand Trunk Canal, i.e. the Trent and Mersey, was then flourishing and was paying a 12% dividend. As this was a major linking route to the north-west and so of importance to Lincolnshire, Banks may have asked for specific information (52).

No further correspondence of this type appears in the Banksian records until the turn of the century and there are two possible explanations for this. First, the practical problems which arose concerning the Horncastle may have left very little time for the pursuit of general facts on other waterways and, second, the publication of Phillips' 'A General History of Inland Navigation' in 1792 would have eliminated the need for this type of enquiry as the current state of canal development was dealt with fully in that volume.

One Yorkshire canal in which Sir Joseph had more than just a commercial interest was the Don Navigation. The Lincoln-based banking family of Ellison had been connected with it for two generations and Richard Ellison 1 and 11 were well-known to, and friends of, Banks.

The River Don flows through both Sheffield and Doncaster before falling into the Ouse at Goole and the

former-mentioned two towns favoured the improvement of the river for navigation purposes. Doncaster Corporation proposed a Bill in 1704 but it was defeated by opposition from riparian owners. Another attempt was made in 1721, this time initiated by Sheffield. Opposition now came from the Aire and Calder company and it was defeated again. Sir Joseph had copies of the arguments of both sides in this second attempt (53).

Undeterred, the promotion was renewed by Doncaster Corporation, the Cutlers' Company (representing the industrial interest of Sheffield) and landowners. They employed William Palmer, Joseph Atkinson and Joshua Mitchel to conduct the survey (54). This plan, together with the two mentioned previously, may have been given to Sir Joseph by Richard Ellison 11. From the same source may have come the report by Thomas Tolfield on the possibilities of joining the Don with the River Trent, that is, a proposal for what was to become the Stainforth and Keadby Canal (55).

Richard Ellison was very concerned with the idea of a junction canal between the Don and the Trent and the promotion meeting for such a link was held on 17 October 1791, with Ellison in the Chair. The survey and plan were made and Banks received a copy (56).

Ellison had two further interests in the promotion of Yorkshire canals; the Barnsley and the Dearne and Dove. The Barnsley Canal was proposed by the Aire and Calder and Don Navigations to run from the River Calder at Warmfield to Barnby Bridge, just north-east of Barnsley. From Barnsley it would join the intended Dearne and Dove Canal which would

meet the Don Navigation near Swinton. Originally, the Aire and Calder and Don Navigations had their own, separate ideas for lines but they agreed to amalgamate their plans at a meeting held at Wakefield on 20 October 1792. Banks had a copy of the minutes (57). In his possession also was a printed copy of the minutes of the promotion meeting for the Dearne and Dove, held two days later, on 22 October. Opposition to the proposals came from the Calder and Hebble.

Battle was joined between the rivals and Banks collected a number of printed documents relating to the events as they unfolded (58).

In 1793 Sir Joseph was opposing the plans put forward by the promoters of the Grantham Canal on behalf of the Witham Drainage Commissioners (of which he was one) as they were concerned with the possibilities of a deficiency of water passing from that canal into the upper Witham. However, he did not oppose the Grantham as such and was an ardent supporter of it once the water supply problem had been settled.

The Grantham connected with the Trent at its western end at West Bridgford in Nottinghamshire. Almost opposite this confluence today is the entrance to the Nottingham Canal which, with those canals to which it is connected, gives access into Derbyshire and the Banks' family estate at Overton, near Ashover. This connection aroused in him additional interest in the canal construction which was planned for that district. He collected three pamphlets about the Derby and Nottingham Canal Bill, that is, the proposed Trent Canal, which came to nothing (59) and two plans

relating to the Nottingham Canal (60). He also had documents relating to the Nottingham's rival, the Erewash, including the original survey plan of 1777 and the reasons for that, company's opposition to the proposed Nottingham Canal (61).

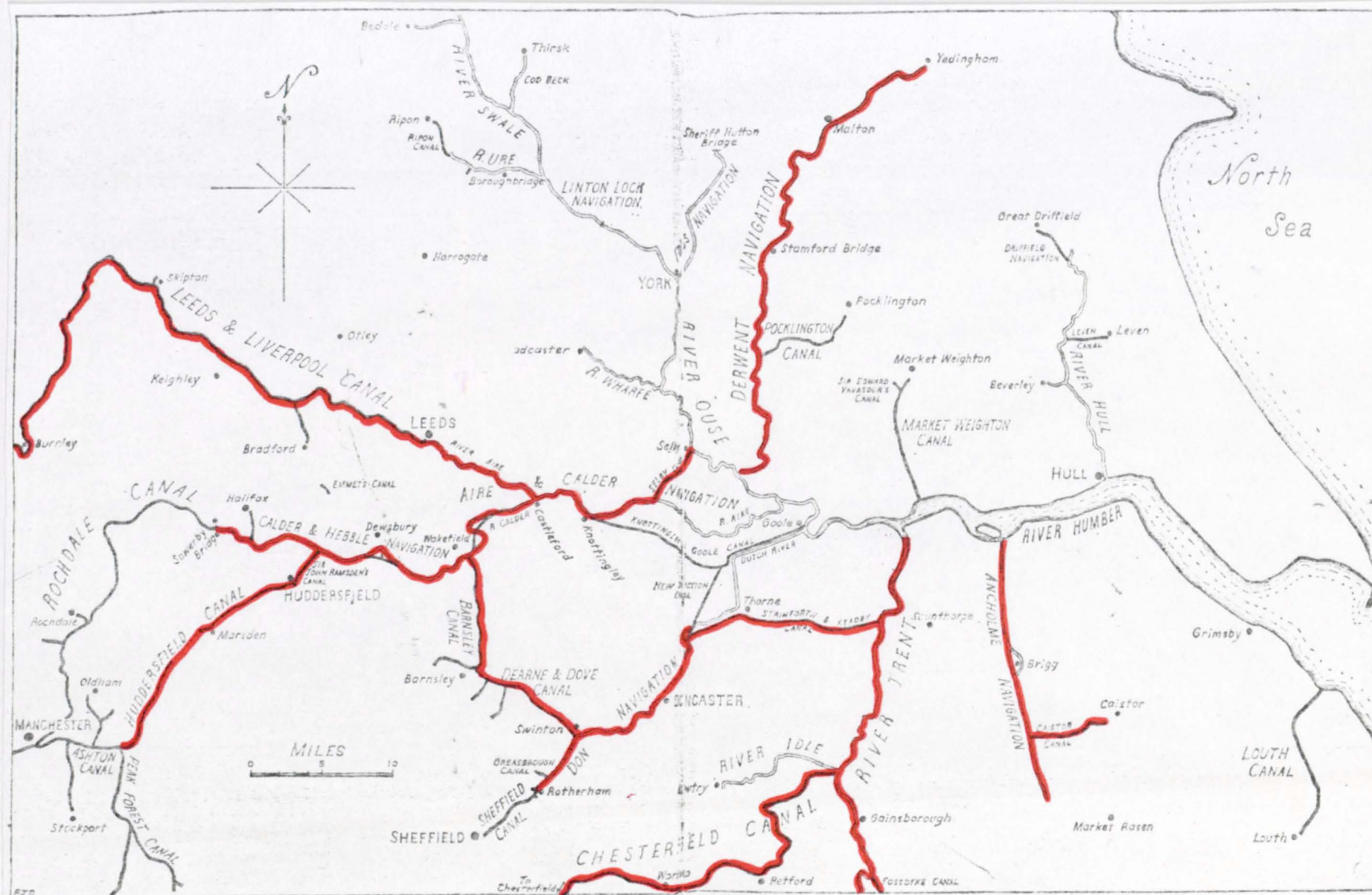
The Cromford Canal is really an extension of the Nottingham and Erewash Canals above Langley Mill and Banks was an active promoter of it (62) as it represented an opportunity for personal gain, coming as close as it did to his lands. He had a copy of William Jessop's survey report (63) together with the plan (64).

South of the Nottingham is found a group of canals which were once intended to be linked with Lincolnshire. The first of these, passing through Stamford on the River Welland, was planned to be joined to Oakham by a 'Stamford Junction Canal'. The original intention was expressed at the time of the promotion of the Oakham Canal in 1785 and, as this affected Lincolnshire directly, Banks had a copy of the plan (65).

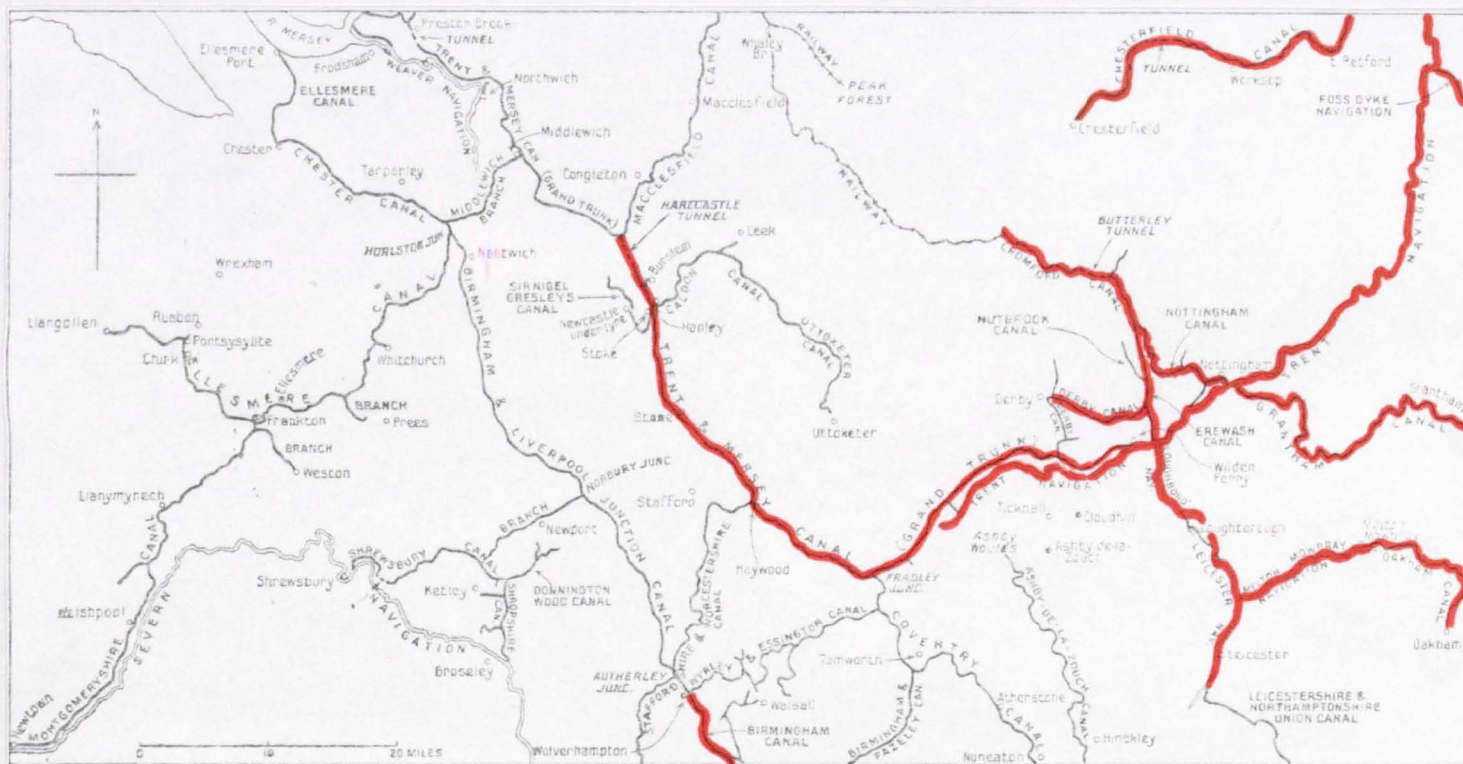
The Oakham Canal joined the Melton Mowbray Navigation at that town and, from there via the Leicester Navigation and Loughborough (Soar) Navigation, it met the Trent opposite the Erewash. Sir Joseph had documents relating to all these (66).

The Grantham, Cromford, Erewash and Nottingham Canals all communicate eventually with the Trent, a waterway about which Banks knew a great deal. References to the Trent and its navigation abound in the documentation Sir Joseph has left and many are given in his correspondence with Richard Ellison II and III, the lessees of the Fossdyke Canal (67).

Lying between the Nottingham Canal and the Stainforth and



A MAP OF THE WATERWAYS OF YORKSHIRE, AND THEIR CONNECTIONS,
OF WHICH SIR JOSEPH BANKS HAD COLLECTED DOCUMENTS.



A MAP OF THE WATERWAYS OF THE EAST MIDLANDS, AND THEIR
 CONNECTIONS, ABOUT WHICH SIR JOSEPH BANKS HAD DOCUMENTS IN
 HIS MANUSCRIPT COLLECTION.

Keadby, and entering the Trent, is the Chesterfield Canal. Banks had two plans of this waterway and also some printed accounts (68).

With the beginning of navigation on the Horncastle Canal in 1802, Banks was relieved of a great deal of worry and responsibility and could turn his attention fully to the promotion of, what were to be, the great works of Lincolnshire drainage - in south Holland and in the fens north and east of Boston. While these were to prove time-consuming in the ensuing years, he was now able to gain a wider picture of canal building both at home and abroad. This interest seems to have been neglected somewhat in the years from the passing of the Horncastle Act (1792) until that navigation's completion and this resurgence marks the commencement of the fourth, and final, 'phase' in Banks' waterways' interest.

Knowledge of his desire for information relating to canals had spread to France and, in 1802, a correspondent, Jacques Rene Tenon (1724-1816), a Parisian surgeon, introduced a M. Desjoberts, who was an authority on the,

'... waters and forests of France ...' (69)

Desjoberts was taking his son to England to perfect his knowledge of the language and he intended delivering to Sir Joseph a dissertation on a projected canal to join the River Somme with the Escaut. (70)

The following year he was being consulted by the Irish Under-Secretary, William Gregory (1766-1840), who was under

instructions from the Directors General of Inland Navigation to submit for Banks' opinion a plan for the improvement of Dublin harbour (71). After the 'Union' of 1800 the government was anxious to improve this and a number of 'experts' were asked for their views. Captain William Bligh conducted a survey in December 1800 and, in January 1801, Sir Thomas Page was involved. Page resigned from participation in April 1801 and, in the following December, John Rennie was approached. It would seem that Sir Joseph's view was sought by Gregory, on what was by then a very controversial subject, as just another 'expert' (72). Banks was appreciative of the honour done to him but he had to tell Gregory that he felt that he had insufficient knowledge to give an opinion of any value. This may have been true but he also may not have wanted to become involved in a project where he might have been intruding on the work of his friend, Rennie, feeling that he could comment when the waterways concerned were those in south Lincolnshire but not when there was no necessity of possibly coming into disagreement with him over a 'foreign' dock. The only comment he would make, however, was that he considered that,

'... nature has provided Dublin with every advantage for a harbour ...' (73)

In 1804 Banks was in contact with the Spencer family of Althorp Hall in Northamptonshire. The 1st. Earl Spencer had been a promoter of the Trent and Mersey Canal in the mid

18th. century and his son, George John, maintained a canal interest. The family possessed a collection of canal maps and George must have approached Sir Joseph with a request to add to it, a request which was duly complied with. Whatever duplicates he had at the time and felt he could part with Banks must have passed over (74).

By this time John Rennie was working on plans for the improvement of East, West and Wildmore Fens and also Boston 'Haven' and so was in quite close touch with Banks. However, he had commitments outside Lincolnshire and, in the October of 1804, he was on the south coast of England. The Peace of Amiens of 1802 had brought a temporary halt and uneasy truce between the United Kingdom and France and war had begun again between the two countries in May 1803. Late in that year a French military build-up had begun at Boulogne for what was considered to be, on this side of the Channel at least, a possible invasion. Rennie was now acting as consultant engineer to the government regarding certain preparations to be taken against such an invasion from the Continent. In order to strengthen the preparedness of the south-east it was proposed to construct a military canal from Shorncliffe to Rye and to make a dock at Rye for gunboats. Rennie was employed to supervise this and so urgent had it become that he had been advised by the Duke of York (Frederick), the Commander-in-Chief of the army in Great Britain, to cancel all other engagements. He was also to meet Pitt at Dymchurch to discuss the schemes.

In the midst of all this activity Rennie found time to write to Banks. As he could not leave the south meetings

planned in Boston to forward the two projects would have to be postponed, Rennie explained, and this would have been reason enough for writing. However, he went further and, supplied Sir Joseph with details of the proposed canal and dock, knowing that he would be pleased to receive this information for possible future reference (75).

A brief correspondence was entered into in 1805 between Banks and John Rickman FRS (1771-1840), a statistician (76). Rickman was secretary to the Commissioners of the Caledonian Canal. The previous autumn William Jessop and Thomas Telford had inspected the line to be taken by the projected canal and decided upon the type and size of the locks to be constructed and Rickman's message to Banks was a copy of the surveyors' report. Receiving Sir Joseph's favourable acceptance of this, Rickman also sent a 'Report on Roads and Bridges in the Highlands', an undertaking he said was less,

'... liable to roquery than the Caledonian canal
...'. (77)

In later life Banks became involved briefly with one of the newest inventions and one that epitomises the technology of the industrial world as we know it today - electricity.

Experimentation with the phenomena of electricity had been going on since the early years of the eighteenth century and knowledge of the subject was summarised by Joseph Priestly in his 'History of Electricity' (1767). However, this was static electricity and it was not until the end of the century that a battery which could produce weak electric currents was devised by Alessandro Volta. In 1800 Volta described his

famous 'pile' in a letter to Sir Joseph Banks (78). A spate of activity followed resulting in numerous discoveries, notably those of Humphry Davy in his Bakerian Lectures to the Royal Society in 1806 and 1807. Banks was therefore well aware of the work being done in this new area of science.

In 1811 he was contacted by a naval officer, Captain William Ricketts, who submitted a scheme for the improvement of the telegraphs, which were then operated by sight and the use of flags and semaphore towers (79). Ricketts admitted that he had little knowledge of electricity and he did not give any details of the equipment he considered necessary for the implementation of his plan which was to make use of an electric current conveyed by the side of canals,

'... What is there to prevent Telegraph wires from being properly led within canals or pipes either above or under the ground from one place to another and thereby convey a message to any distance? I cannot forebear on its practicability that while we see canals cutting through every part of England, the simple accompaniment of such a pipe on their borders might easily be accomplished at a trifling comparative expense ...'

Ricketts offered his plan to the Royal Society through Banks, whose reply has not been found. That Banks was not in approval with what he had read is evident and his answer was probably to the effect that when the scheme had been formulated in more detail he would consider it again. It was resubmitted in January 1814 but Banks thought that,

'... it is a project not likely in any shape to succeed as far as I can judge ...' (80)

It is unfortunate that in this, perhaps the final contact Sir Joseph had with inventions relating to canals, he should have been so wrong in his assessment of its potential.

CHAPTER FOUR

A BACKGROUND TO LINCOLNSHIRE AND AN INTRODUCTION TO SIR
JOSEPH BANKS AND THE 'WITHAM ACT'.

The waterways of Lincolnshire, in whose promotion and later development Sir Joseph Banks took a personal and active part, were those which were located in the southern half of the county. The reasons for this involvement were diverse but three appear outstanding.

First, there was the personal profit which would result from the improvements in drainage and transport in those districts in which he was a landowner. Examples of this are the Louth and Horncastle canals, the Welland Navigation and the Witham Navigable Drains.

The second motivation was an altruistic one in that he felt able to assist the development of the region in general. To this end he collected newspaper cuttings, surveyors' reports and plans and entered into correspondence with promoters of schemes and those opposing. In the case of the Sleaford Navigation he supported the application for an Act by appearing as a witness for the promoters at the parliamentary Select Committee proceedings, the only occasion on which he appears to have done so. Although he took an

interest in the north Lincolnshire waterways, such as the Ancholme and Caister Canals, and also those further afield to the south, including the improvements being made on the Great Ouse (Eau Brink Cut) and the harbour at Wells, his involvement was not great.

Third, there were occasions when he acted as an agent for the Witham Drainage or Navigation Commissioners (whose function is explained on p. 93/4). In a number of instances Sir Joseph was appointed to be a member of a sub-committee of one of these bodies to safeguard those Trusts' interests. This was a role he assumed during the promotion of the Grantham Canal and in some of the works relating to the River Witham itself.

Having mentioned these motivations, that of a general interest in transport and technological progress must not be disregarded.

In an attempt to assess the importance of Banks to the waterways' development in the county an overall review of the changes in them which took place during his lifetime needs to be taken and then the part he played in bringing about these alterations can be placed into context.

THE PHYSICAL BACKGROUND TO LINCOLNSHIRE

The county of Lincolnshire is characterised by extremes of topography. To the west lies a north-south orientated Jurassic Limestone ridge which stretches from the Humber Estuary in the north to Stamford in the south. To the west and south-west of this is the valley of the River Witham which, rising near Grantham, flows first north, then east through the ridge at Lincoln and then south to the sea at Boston. Therefore, lowlands to the east of the ridge are dominated by the lower tract of the Witham river and the tributaries which flow to it, especially the Slea and Bain. The northern part of this lowland is drained by the Ancholme flowing north to the Humber. However, a second upland area of significance, the chalk Lincolnshire Wolds, lies to the east of these lowlands and separate them from the sea. The Wolds do not have the same north-south extent as the limestone, running from the Humber to about Spilsby, but they are wider, being about 30 miles from east to west at their widest point. From their flanks the Bain rises and flows west to meet the Witham and from the eastern sides another series of rivers run to the sea, including, for example, the Lud and the Steeping.

The south-eastern part of the county is characterised by the 'Fens', the lands drained by the lower courses of the rivers Witham and Welland. The 'Fenlands' are not confined to Lincolnshire but continue south and east into Cambridgeshire, Huntingdonshire and Norfolk. These tracts of marine and riverine clays and silts, lying only a few metres above sea



THE PHYSICAL BACKGROUND TO LINCOLNSHIRE

TOWNS

B - BOSTON
G - GRANTHAM
L - LINCOLN
S - STAMFORD
Sp - SPILSBY

RIVERS

1 - WITHAM
2 - SLEA
3 - BAIN
4 - ANCHOLME
5 - LUD
6 - STEEPING
7 - WELLAND
8 - GLEN
9 - NENE

- LINCOLNSHIRE COUNTY BOUNDARY (generalised)

level at their highest, probably adopted their present form due to a relative rise in sea level some time after the Roman period.

Local people who work the very fertile Fen soils have always had to balance their high yields against the danger of flooding by the rivers and inundation by the sea. Thus, from before the Norman Conquest, drainage was seen as the only way to exploit satisfactorily these resources but permanent and relatively large-scale settlement did not begin until some time after when drainage of the land made this possible. The main areas requiring drainage: the salt marshes on the north-east coast; the river estuaries and districts susceptible to sea inundation; and the low-gradient and frequently-flooding river valleys, are shown on the map on p. 86. Despite the attempts at drainage which occurred during the Middle Ages, little had been achieved by 1743.

With the problems of flooding went those of transportation. From earliest times a north-south movement through the county could be effected by using the limestone ridge but until the eighteenth century this was difficult owing to the lack of road facilities. When Sir Joseph was born the only turnpikes which existed in the county were those covering the stretch of the 'Great North Road' from Stamford, via Grantham, to Newark (1) and also that in an area east of Lincoln (2). It was not until 1756, when Banks was 13, that the limestone ridge began to be turnpiked with a road from Lincoln to Peterborough (3). The fenlands continued to be avoided until drainage made their construction possible and even when a turnpike had been established there was no guarantee of

regular transport.

'The whole of the land between Brothertoft and Boston was frequently overflowed during the winter season. The turnpike road from Boston to Swineshead, and the intersecting roads leading to adjacent villages, were covered with a considerable depth of water; of course they were dangerous to travel upon, and the country people brought their produce to Boston market in boats, being enabled very frequently to come in them as far as Rose-Garth corner in West-street, the water often reaching the White Horse Inn in that street.' (4)

With little road/land transport available, people and merchandise had to use the only means available and so a tradition of water conveyance existed in the area. However, uncontrolled flooding presented an unsatisfactory state of affairs as far as transport was concerned as waterlevels could never be assured and this led to frequent interruptions in water carriage. The water had to be confined to specific channels and the attempted reclamation of river valleys had been going on for centuries before Banks' birth. Even so, additional stimuli to such projects were needed and these were forthcoming with the movements of population from countryside to town during the eighteenth century and the necessity of transporting the agricultural produce of the Fens to these urban areas. By 1743 various attempts had been

made to tame the Witham and a successful cut for navigation and drainage had been made by the Romans from it at Lincoln to join the River Trent at Torksey. This was the Fosdyke Canal and despite its being unnavigable for long periods since Roman times it was reopened to traffic in 1744. The Witham itself below Lincoln had proved more difficult. Here the river occupied a very wide flood plain over which it flowed slowly. Over a dozen major meanders were to be found in this section and obstruction of the channel from silt deposition was common. By 1743 all attempts to open this river to permanent navigation had proved unsuccessful.

A similar situation existed on the lower Witham tributaries and, again, little of a permanent nature had been achieved by the time Banks was born.

By the end of his life the view of the transport facilities in the county that Banks would have seen would have been radically different. The period of turnpiking in Lincolnshire was over - only the road from Swineshead to Fosdyke remained to be improved (5). The Witham and its main tributaries had been straightened, embanked and locked and they provided certain and regular transport and drainage channels. The sea defences were proving efficient and major drainage works were underway in the fens of the Steeping, Witham and Welland rivers. With the drainage came enclosure and settlement. What had formerly been sparsely populated, dangerous and marginal agricultural areas in the 1740's were, by the 1820's, highly productive, prosperous and relatively safe districts. There was still much reclamation to be completed but the future of the area had been assured by the time of Banks' death.

The key to all the improvements carried out over the eight decades of Banks' life was the River Witham and, to a lesser extent, the Welland. If the lower Witham could not be controlled little could be achieved in drainage or navigation within the area of its drainage basin. The attempts which had been made to achieve this before the middle of the eighteenth century had foundered for two reasons: first, the attempts were undertaken on a relatively small scale and did not have the resources, especially in financial terms, to maintain any improvements made; and second, the technological expertise did not become available until then to make such an undertaking likely to succeed. To prove successful the works would need the sanction of Parliament for their commencement and continuation, a central and perpetual control for the works carried out, adequate funding and the co-operation of all interested parties. The second factor for previous failure was overcome by the development of the techniques of civil engineering, a profession whose expertise had been gained from the late seventeenth century onwards, particularly in relation to drainage and canal construction in other parts of the country.

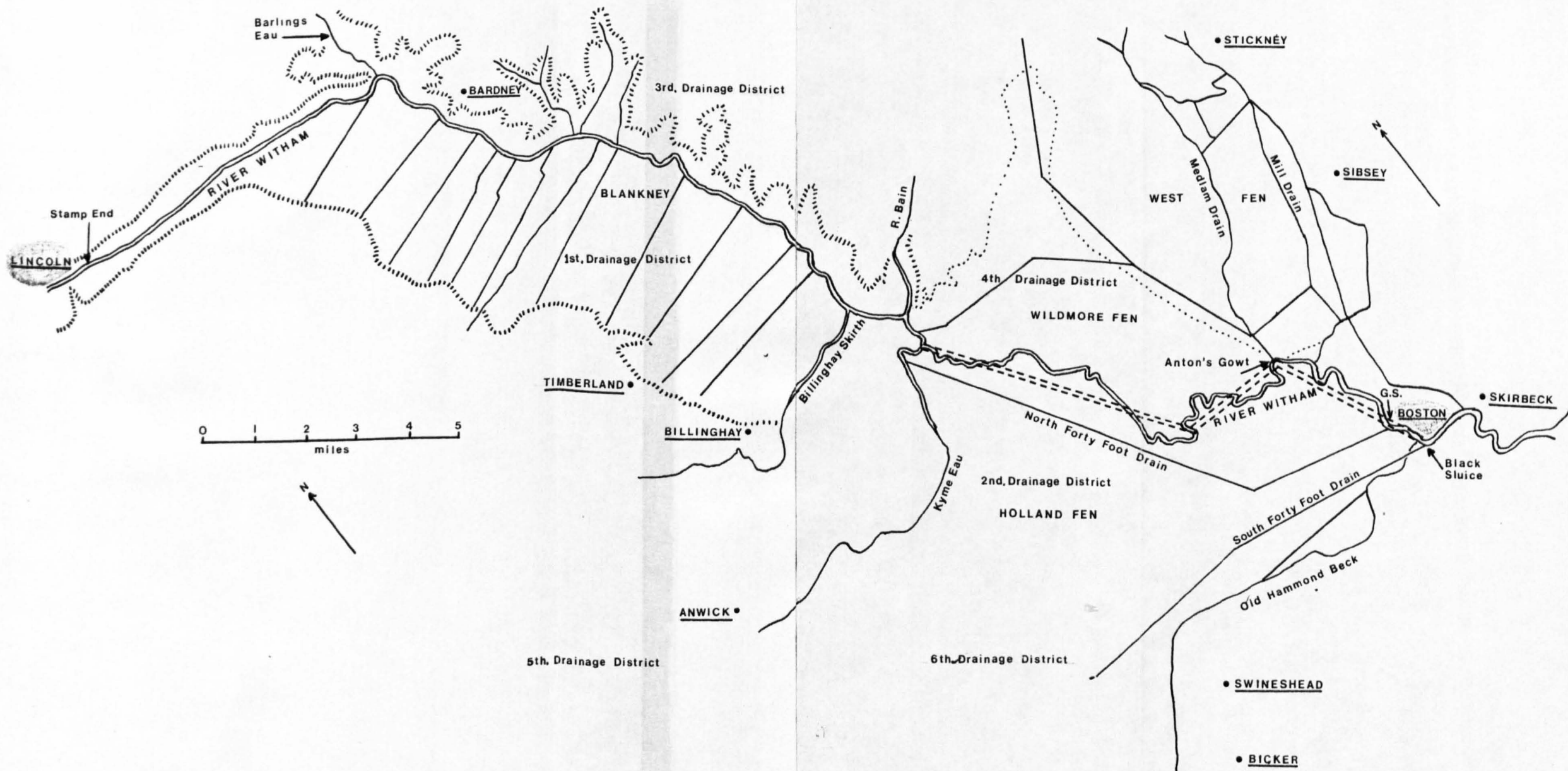
It was the 'Witham Act' which made these improvements possible.

THE 'WITHAM ACT' AND A SUMMARY OF SIR JOSEPH'S ATTENDANCE AS
A GENERAL DRAINAGE COMMISSIONER.

In November 1761 the 18 year-old Mr. Joseph Banks attended a meeting at Sleaford for the purpose of considering the heads of a Bill to be presented to Parliament for a 'Witham Act' (6). He was there in the capacity of a major landowner (his father having died the previous August) whose property was to be affected by the provisions of the Bill, for he owned land along the side of the river as well as in the neighbourhood of the River Bain.

Joseph had yet to attain his majority and enter fully into his inheritance but he was still an active supporter of the scheme and, when the fund was opened to meet the expenses of passing the Bill through Parliament, he subscribed £23.

The 'Witham Act' was obtained in 1762 and the land area which came under its jurisdiction was divided into six separate 'drainage districts'. The 'First' consisted of the fens extending from Lincoln to the River Kyme Eau (Slea) on the south-west side of the Witham. The 'Second' comprised Holland Fen, west of Boston and was bounded on the north by the Kyme Eau, on the east by the Witham and the south and west by the villages of Swineshead and Heckington respectively. The 'Third District' extended from Lincoln to the River Bain on the east of the Witham; the 'Fourth' was the two fens of West and Wildmore (7); the 'Fifth' covered Digby, North Kyme, Ruskington, Dorrington and Anwick Fens and the 'Sixth', the fens of Swineshead, Howell, Ewerby,



THE WITHAM VALLEY BELOW LINCOLN, 1762
(based on the map by John Grundy)

Key	
	Main drains
	Fen boundary
	Edge of the Witham flood plain
	The straightened Witham after c.1780
	G.S. The Grand Sluice

Heckington, South Kyme and Little and Great Hale.

The Act allowed for the election of 37 'General Commissioners for Drainage by the River Witham', 31 of whom were elected by the drainage districts. The 'First' could elect 7; the 'Second', 6; the 'Third', 5; the 'Fourth', 8; the 'Fifth', 2, and the 'Sixth', 3. Their function was to initiate, finance and oversee the drainage and preservation of reclaimed land within the Witham catchment.

Each General Commissioner had to own land with a rateable value of at least £100 a year, or have personal property to the value of £2,000 or be heir to landed property with a value of £200 per annum.

The remaining six General Commissioners were the Mayors of Lincoln and Boston and two elected by both the City of Lincoln and Boston Corporation.

The General Commissioners were elected for a 3-year term of office and the elections took place on the occasion of the Annual General Meeting held on the first Tuesday in July at Sleaford, Boston or Lincoln.

The six drainage districts were managed by 'District Commissioners' who were elected by the parishes within the respective districts. Each parish could choose one Commissioner and it was from these 'District' Commissioners that the 'General' Commissioners were chosen.

A 'Navigation Commission' was appointed also. This was elected separately from the Drainage Trust and was concerned with the improvement of the navigation on the Withaam as distinct from the drainage function of that waterway. However, it usually happened that the concern of one was that

of the other too. The Navigation Commission consisted of the Mayors of Lincoln and Boston, 4 members elected by both Lincoln and Boston and a further 10 members elected by the General Drainage Commissioners from amongst their ranks.

The Navigation Commissioners' brief was to restore the navigation of the Witham and to this end they had the power to erect locks, make cuts, clean out the river as far as the High Bridge at Lincoln, construct bridges, locks and staunches and to do whatever they thought necessary, provided the water in the Witham was not held higher than 2 feet (0.61m) above the natural surface of the land.

During the period of the existence of the Navigation Commission (lasting until the control of navigation on the Witham was assumed by the Great Northern Railway in 1846) the main structures made were three locks, one at Kirkstead, another at Barlings, near Lincoln and the third on the south-east side of Lincoln at Stamp End.

The 'Grand Sluice', the major water control of the Withaam at Boston, was a joint venture with the Drainage Commissioners and with them, and the Sleaford and Horncastle Navigations, a cut was made from the Witham into Brayford Pool (and so to the Fosseydyke Canal), at Lincoln in the late 1790's.

When the 'Witham Act' was passed in 1762 Joseph was still at Oxford and he remained there until the December of the following year. He had been elected a General Drainage Commissioner by the Fourth District (8) but for the first five years of the life of the 'Witham Act' he did not attend a meeting but was represented at the Lincolnshire gatherings

by proxies, either his uncle, Robert Banks Hodgkinson, or his steward, Benjamin Stephenson (9).

After leaving Oxford Joseph spent much of his time in Lincolnshire learning about the running of a great estate and although he continued not to attend any of the meetings in person he was kept abreast of developments as the relevant papers and documents were sent to him for study.

The foremost scheme of this period was, undoubtedly, the erection of the 'Grand Sluice' at Boston, about which he was kept fully informed (10). When he was in London the proceedings of the Witham Commissioners would have been sent to him, either to his mother's house in Paradise Row, Chelsea, or to his rooms in Burlington Street.

The first meeting of the Drainage Commissioners which he attended was in May 1767. He was then a Fellow of the Royal Society and had returned about six months previously from his first voyage of exploration, that to Newfoundland and Labrador. The meeting was held in the house of Lord Willoughby de Broke in Hill Street, off Burlington Square. It was convened there,

'... for the Convenience of his Lordship &
Joseph Banks Esquire ...' (11)

No details of this meeting appear in the Commissioners' minutes - it was simply adjourned.

He attended his first Lincolnshire meeting soon after, on 7 July, at Boston Town Hall.

No further attendances occur for some while after that for,

in November 1767, he was travelling in Wales and north-west England (see Chapter 3) and, almost at once upon his return to London, he was off on the Australian voyage, returning in July 1771. In the year between that return and the commencement of the Icelandic travels he did not attend any meetings and it was four years after that return that he appears at the Commissioners' gatherings again.

By then he was arguably the most noteworthy figure in the county and also a major landowner and so, on 25 October 1776, he took the Chair at the General Drainage Commissioners' meeting for the first time (12).

From that time his attendance at the meetings was regular even if widely spaced as his main periods of named appearance in the minutes are those when he was in Lincolnshire during the autumn and into the new year.

Whenever Banks did not attend personally he would be sent the minutes and any additional notes of the proceedings and he was in regular correspondence with fellow Commissioners, in particular, John Linton of Freiston. He attempted to be present at London meetings, for example, at those concerned with the parliamentary progress of Bills in which the Commission had an interest. These were frequently held at the St. Albans Tavern (13).

The first time Sir Joseph is noted as being appointed to the Navigation Commission is on 3 May 1790 and this is significant. From 1790 onwards the Witham Drainage and Navigation Commissioners were most intimately involved with the development of the canal and navigation schemes leading to, and connecting with, the Witham, including the primarily

drainage with associated navigation function, of the 'Fourth District' fens north of Boston, to be known as the 'Witham Navigable Drains'. The role played by Sir Joseph in these made his position as a Navigation Commissioner vital.

His final attendance at a Drainage Commissioners' meeting was on 1 November 1817, during his last annual visit to Lincolnshire. His health was failing and it had been doubtful whether he would come north from London that year. His doctor, Sir Everard Home, had given his consent and Banks wrote to him,

'Your permission to visit Lincolnshire this Autumn gives me spirits to undertake the journey ... I have arranged the journey in very short stages, none as much as 40 miles a day. On Sunday I start and stop the night at Lord Salisbury's at Hatfield. The first week in November brings us back ...' (14)

Therefore, this Drainage Commissioners' meeting was one of the last public activities which Sir Joseph performed in his native county.

CHAPTER FIVE

SIR JOSEPH AND THE RIVER WITHAM

INTRODUCTION

As the River Witham was the key to much of the drainage and navigation of the south Lincolnshire waterways it is proposed that in assessing Sir Joseph's contribution to their growth this river and its associated tributaries and fens will be considered first. This will cover much of the total length of time he was involved with all the waterways of the area and, of necessity, some will be introduced in this chapter about the Witham even though separate sections of this work are devoted to them exclusively. In order to avoid repetition, personalities and projects which are concerned primarily with waterways other than the Witham but which impinge on it will be mentioned briefly and fuller details will be given in a more appropriate place.

A consideration of the River Welland will be undertaken next and, finally, those works which were unconnected with either the Witham or Welland drainage basins.

A MAP TO SHOW THOSE LINCOLNSHIRE
CANALS, NAVIGATIONS & DRAINAGE
SCHEMES IN WHOSE PROMOTION AND
DEVELOPMENT SIR JOSEPH BANKS TOOK
A PERSONAL AND ACTIVE INTEREST.

(Dates refer to the period of
activity with the particular
project.)

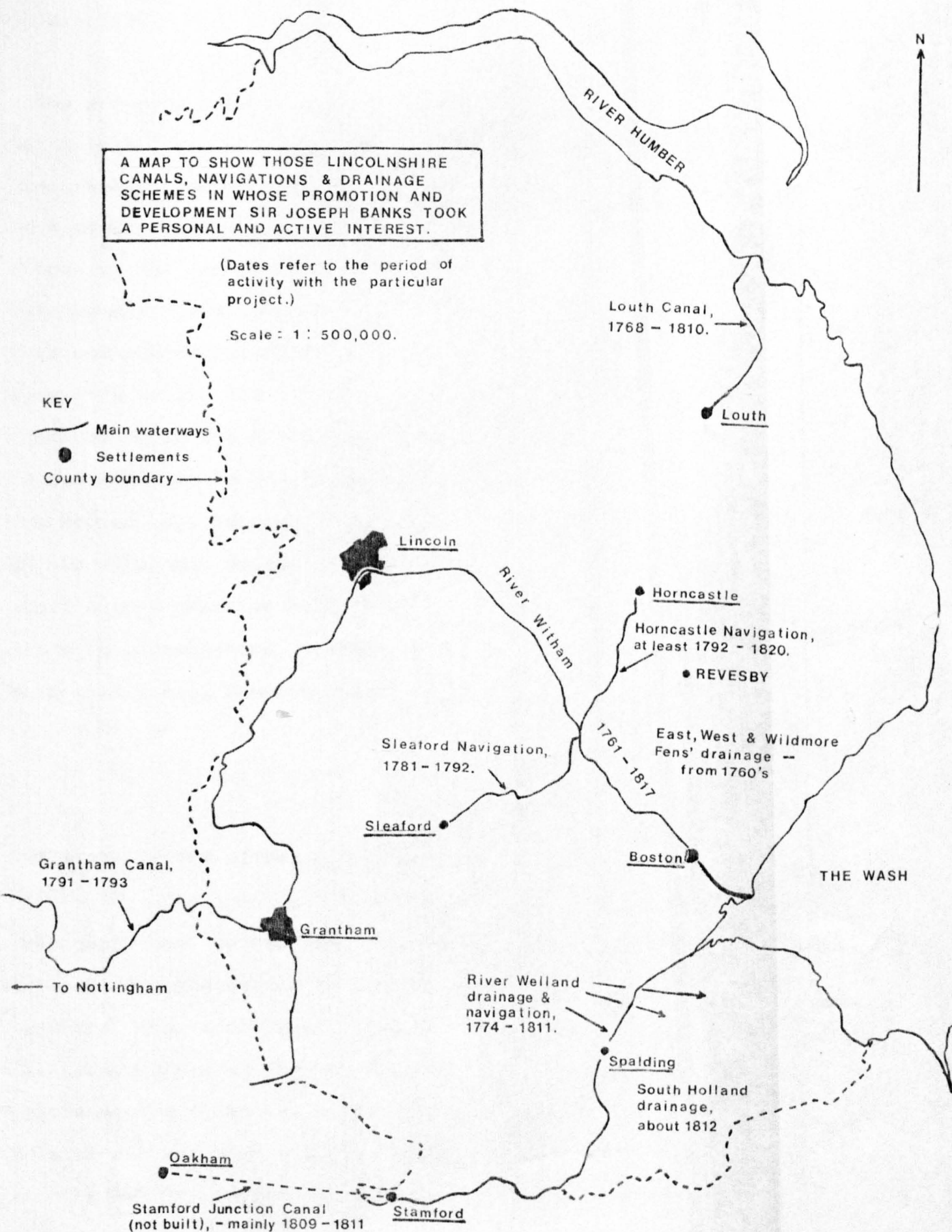
Scale: 1 : 500,000.

KEY

Main waterways

Settlements

County boundary



1762 - 1791.

The previous chapter has noted how Sir Joseph's attendance at Witham General Drainage Commissioners' meetings in Lincolnshire became regular from about 1776 but he seems to have adopted a passive posture for some time after. The first stages in the improvement of the Witham as authorised by the 'Witham Act' were carried out between 1762 and 1788 and while this was proceeding Banks was engaged with weightier matters elsewhere - on his travels and, later, in London with commitments to the Royal Society and Kew Botanical Gardens. He was not able to devote a great deal of time to events on the Witham but, by about the later 1780's, the second 'phase' of his waterways education had been completed and he began to adopt a more positive role in the drainage and navigation scene in Lincolnshire, including taking the Chair at the General Drainage Commissioners' meetings.

THE STATE OF THE WITHAM FINANCES, 1791.

Although the course of the Witham had been improved, straightened and opened to traffic by 1788 the cost of this work and the additional expenses afterwards required to maintain and finish the navigation and drainage began to impose severe financial burdens on the Trust. One instance of this strain was that the river embankments were not extended all the way to Lincoln but ended somewhat south of that city.

This was a last minute decision and occurred at the time when Banks was making his first recorded visit to the works. As these initial improvements were entering their final stages in 1787 Banks visited Bardney, just south of Lincoln, on 12 September, where he spoke to the General Drainage Commissioners' surveyor, William Bonner, who promised him,

'... most Faithfully that he would finish up to Lincoln in the Spring Quarter of next year ...'

(1)

During the previous year the river had been scoured out from Billingham Skirth to Blankney and this had been continued to Barlings by the end of 1787. The combined cost of these two years' works alone was almost £3,000, with a further £1,000 anticipated necessary to complete to Lincoln. This, together with other constructions, brought the total costs for 1786/7 to about £5,250.

A major source of income for the navigation improvements was from toll receipts, the drainage works being financed from acre tax and from sums of money lent to the Trust on which interest was paid. By the middle of 1791 the General Drainage Commissioners realised that there would be a cash shortfall of some several thousands of pounds to complete the works within a reasonable time period despite the fact that toll receipts had risen from £592 in 1788 to £862 in 1789 and that a receipt in the £800's had been maintained annually to 1791.

Two courses of action were determined upon by the General

Drainage Commissioners at their annual general meeting in July 1791 (2). Banks did not attend but he was informed of the proposals by the Clerk, Robert Langton Bankes (1724-1803).

The decision was that a new subscription should be raised amongst the Commissioners themselves and this brought forward an immediate commitment of £10,000, shared amongst 13 of those present. Second, it was accepted that the rate of interest on subscriptions and monies advanced should be reduced from 5% to 4.5%.

Langton Bankes wrote to Sir Joseph to ask if he wished to advance any sums under these conditions (3). A reply was immediate. Banks already had £300 in Witham bonds on which he said he was willing to take reduced interest and, in addition, he was,

'... ready to follow the excellent example of my bretheren Commissioners ...' (4)

and advanced a further £1,000 (5). Even though these additional sums had been raised it was decided that an attempt should be made to pay off some of the capital of the loans which had been made to the Trust and that it would be,

'... expedient to postpone all material work on the Witham until [1793].' (6)

when it was hoped that about £700 would be available for this purpose.

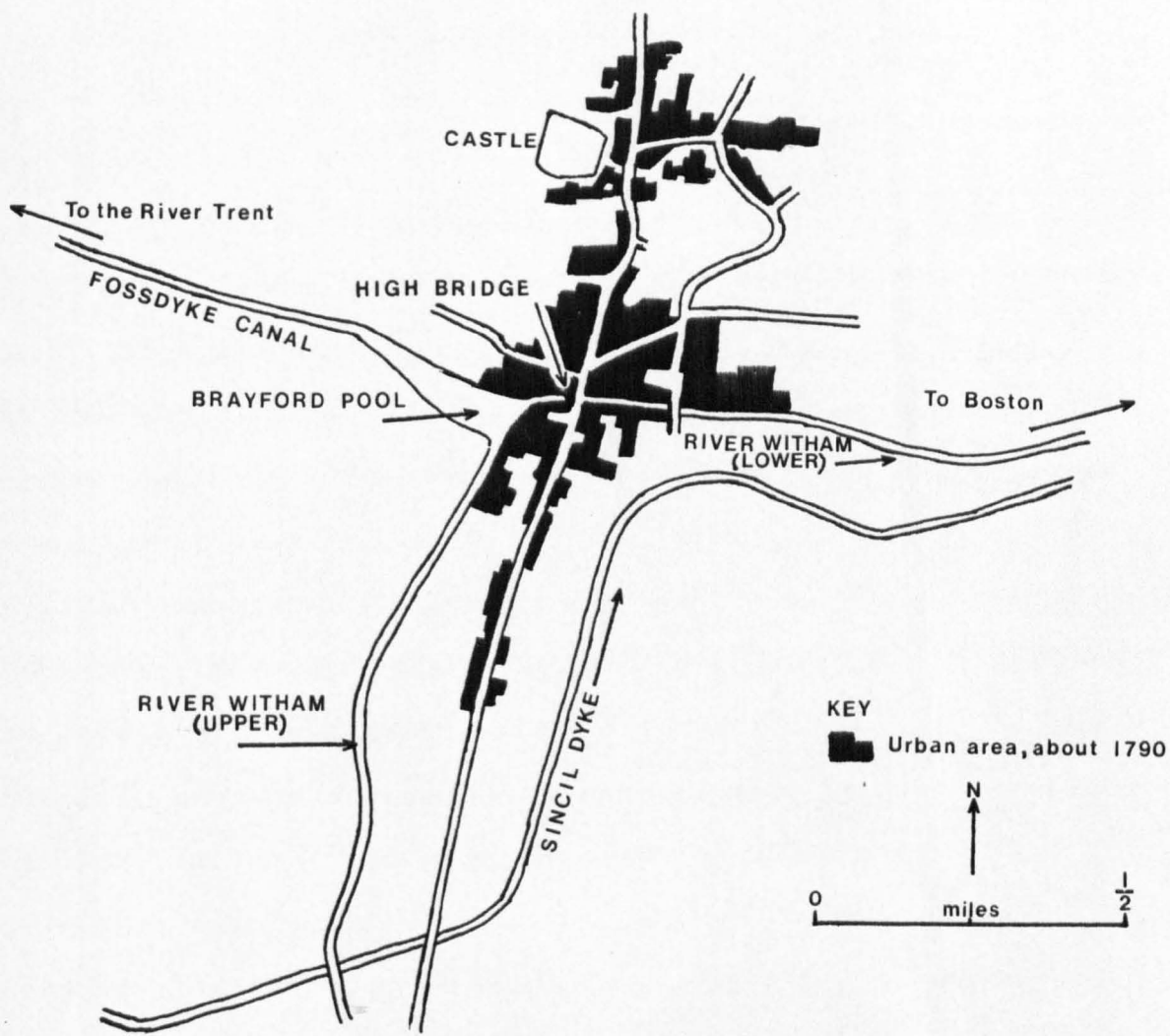
1791 - 1797.

The immediate financial problems of the Witham were to continue for some years as two major works were put in hand about this time and the reduction of the interest rate may well have been prompted by the desire to reduce expenditures before these schemes were entered upon.

The first of these projects was the completion of a navigable link between the Fossdyke Canal and the Witham at Lincoln and the second concerned repairs that were becoming necessary to the three locks on the Witham.

The first project, known as the 'High Bridge Scheme' was an attempt to eliminate a break in water navigation in Lincoln. In that city is Brayford Pool from which, flowing north-west, issue the waters of the Fossdyke Canal. Flowing south-east from Brayford is the Witham but it has to pass first under the 'High Bridge', a medieval structure which, in 1791, had insufficient depth of water under it to allow for the passage of vessels. Cargoes which came to Lincoln by water from the Midlands or north of England passed along the Fossdyke into Brayford and were there subject to land carriage around the High Bridge from the southern end of Brayford into the Witham, a distance of a few hundred yards. If a direct link could be made between the two, a link capable of accommodating the 72-foot barges then being used on the Yorkshire waterways, costs would be lowered and financial benefits would accrue to the region as a whole.

It is difficult to ascertain who were the proposers of such



A MAP TO SHOW THE LOCATION OF THE RIVER WITHAM, FOSSDYKE CANAL, BRAYFORD POOL
AND THE SINCIL DYKE IN LINCOLN ABOUT 1790.

a scheme although they may have been the proprietors of the intended Horncastle Navigation. Their suggestion may have been passed to the Witham Navigation Commissioners and then on to the Drainage Commissioners or, alternatively, the Drainage Commissioners themselves could have proposed it for one of the aims of any scheme would be to improve the drainage of much of the Witham drainage basin.

Early in 1791, the eminent canal engineer, William Jessop (1745-1814), who was well-known to Banks, was contracted to report on the practicability of the idea. He reported that he foresaw little difficulty with proceeding by utilising a route through the High Bridge but he had gained the impression from conversation that the Lincoln authorities and the landowners of the immediate neighbourhood did not favour it (7). Therefore, he proposed an alternative route which by-passed the bridge and used part of the Sincil Dyke, an existing waterway of Roman origin which passed through Lincoln, together with a 400 yard new cut with a water control at the upper end (see map on p.104).

Jessop's conclusion about some of the landowners was correct and this was conveyed to Banks by Major John Cartwright (1740-1824), an important landowner near Boston and a General Drainage Commissioner. Cartwright was attending one of the promotion meetings for the Horncastle Navigation when these views were put to him and it was,

'... represented that opening a communication with the Fossdyke would give vent to so much water in winter, that all the Fenlands between

Chapel Hill and Washingborough would be drowned and utterly unable to support their banks ... I gave my reason for thinking such communications would improve the value to there lands & that they had no danger to apprehend from new water: but the parties still seemed to adhere to their original position. - I thought it right to give you this hint.' (8)

This, then, was the opinion of some of the landowners in mid-September, 1791, and also of the lessee of the Fosseydyke Canal, Richard Ellison (1717-1792) (9) and from this we see that Banks was involved already in the negotiations.

Banks was authorised by one of the sets of Commissioners to secure a second opinion of Jessop's proposals and he approached John Smeaton (1724-1792). However, due to the illness which was to lead to his death the following year, Smeaton declined the offer (10).

Meanwhile, John Parkinson, Banks' land agent at Revesby, had been to Lincoln and listened to the views of the inhabitants to the through route and he confirmed Jessop's observations of opposition (11), an opposition which was made vocal at a meeting on 31 October 1791 (12). The mayor of Lincoln and 48 inhabitants attended, as did Sir Joseph. Argument, and particularly that of Banks' swung opinion to approve the 'High Bridge' route and a vote of 31 to 7 in favour resulted (13). Indeed, Sir Joseph stated soon after that agreement to the High Bridge route had been reached on his assurances as to its preferability (14). However, this

proposal was still treated sceptically by Lincoln Corporation as a whole.

By November 1791 those in favour of the 'High Bridge' route, appeared in print for the first time in a report of the intended Horncastle Navigation meeting of 1 November.

'It appears to this meeting that the counties of York, Derby, Nottingham, Stafford, Lancaster and, in short, all those parts through which the extensive system of canal navigation is carried which ultimately fall into the River Trent and the Humber, are deeply interested in opening a trade with the towns of Boston, Sleaford and Horncastle and their respective neighbourhoods, the ports of Wisbech, Spalding and Lynn and the inland counties with which the navigable rivers of Ouse, Nene, Glen, Welland and South 40 Foot etc. communicate ... it is desirable that a navigable communication is made between the Witham and the Fosdike to a depth of 3 feet 6 inches and that the Corporation of Lincoln be requested to declare whether they have any objection to such communication being by the present course of the River Witham and in case they have not, whether they will agree to be bound by a clause in the Horncastle Act [to come before Parliament the following year] to make such communication under their High Bridge within a limited time to be agreed between the

parties or, in case of their refusal or neglect, to permit the Horncastle Navigation Trust to complete the same.' (15)

The references made to the lead being taken by the Horncastle Navigation promoters would indicate the guiding influence of Banks in these resolutions: he was soon to be appointed that company's 'President'. The Horncastle promoters were determined that this link should be made, by any means, as demonstrated by their attitude towards any stand made by Lincoln Corporation,

'...That in case the Corporation of Lincoln should refuse to make such navigable communication ... or permit the same to be made, the Advocates for the Horncastle Navigation are determined to use their utmost Efforts in Parliament, to have an Act passed for the execution of the canal project by Mr. Jessop, by way of the Sincel Dyke ...' (16)

This threat was not required as the Corporation agreed on 17 November to deepen the floor under the High Bridge so as to allow for the passage of boats of 3 foot 6 inch draught (17).

Thus, the institutions were all in agreement but the landowners still had to be convinced. Those whose estates lay above Lincoln and in the drainage area of the upper Witham were afraid that water would be let off into the lower Witham

during times of scarcity so exacerbating a situation where there was a lack of water already. Those whose estates drained to the lower Witham, downstream from Lincoln, believed that any water-control structures which were built would be opened in flood periods and so subject them to increased dangers of inundation.

Both these fears were put to Sir Joseph by Benjamin Handley (?1746/50-1828) who, besides being a promoter of the Sleaford Navigation, was also a solicitor who had probably received them from many of the landowners affected. The solution which he advocated was the construction of an additional control in the form of a lock situated in the 400 yard cut which Jessop had proposed (18).

Banks thought that support for the scheme by the intended Horncastle and Sleaford Navigations (the Sleaford was also pressing for an Act at this time) would help quiet the minds of those landowners who opposed it (19), particularly if those navigations would between them undertake to provide the money necessary for the erection and maintenance of the structures in the Witham to be used to prevent flooding of the land on either side due to any extra supply of water; these works to be under the management of the Witham Drainage Commissioners.

Banks replied to Handley as to how far he could see the probable effects on the intended Sleaford Navigation, the project with which Handley showed most concern. He estimated the total cost to that company at about £500 but he considered an amount twice that would be worthwhile in the light of the opening to additional markets which the link

would give. Further, he considered that the financial advantages of access to these new markets for their corn and wool would probably be sufficient to convince the landowners.

Handley was in agreement about the sums of money involved although he did suggest the adoption of the Sincil Dyke route in preference to the High Bridge (20) and he noted that he had reason to think that some of the landowners then objecting might be converted if Sincil Dyke was used as it was seen as providing a line with less possibility of flooding and drought. The only other objection he could still foresee could come from Richard Ellison as he would not receive the advantages he would otherwise have as the water level at Brayford Head would need to be raised about a foot if the High Bridge route was to be put into effect and he would also lose the Witham water which had to flow through Sincil Dyke. He further pointed out that the High Bridge itself could constitute a navigation obstruction.

In his response to some of these points (21) Sir Joseph remarked that the landowners above Lincoln would not be hurt by the High Bridge route if a drainage tunnel was laid under the Witham which would keep their lands free from flooding. As for an obstruction caused by the bridge itself, Banks did not see this as a great objection for he noted that when a boat could not pass under the High Bridge it also could not pass under Torksey Bridge which leads into the Trent, so any traffic would be halted anyway. As far as Richard Ellison was concerned Banks had, by argument, now gained his support.

Handley's reservations upon a High Bridge route may have been based in part on his reliance on Jessop's report

advocating the use of Sincil Dyke in preference to Banks' opinion and also on the influence of some of the Horncastle Navigation promoters who were of the same opinion (22). This indecision was reflected in the communication which was passing between the two Navigation promotion groups as a report of a Horncastle (intended) Navigation meeting proves,

'The report of the committee appointed to attend the Sleaford meeting (23) (that no agreement was made with the Advocates for that Navigation respecting the navigable communication through Lincoln) was received ...' (24)

By the beginning of January 1792 Banks' (and Ellison's) promotion of a navigation through the High Bridge was gaining support (25). The Witham Commissioners were with them and now that there had been the change in the opinion of Lincoln Corporation also, the General Drainage Commissioners called upon William Jessop to prepare a second report based on this High Bridge route exclusively. However, before this was presented by Jessop to the Commissioners they instructed their engineers William Bonner and John Hudson (?-1797/1802) to prepare a report on the state of the Witham and on the probable effects of extending the Witham's navigation through Lincoln High Bridge (26).

Their report, of 9 February 1792 (27), recommended the adoption of Jessop's line via the Sincil Dyke but, they commented, the High Bridge route could be used if additional works were undertaken on the Witham below Lincoln to

accommodate the greater flow of water resulting.

Jessop's second report (28), dated 29 February 1792, was presented, with that of Bonner and Hudson, at a general meeting of landowners, Drainage and Navigation Commissioners and interested parties of the Sleaford and Horncastle intended navigations, held at the 'Angel Inn' at Sleaford on 8 March. Jessop began by stating that he had been informed by the General Drainage Commissioners that the fears which had been expressed to him on a route through the High Bridge had been groundless and that the inhabitants now wanted such a link. From what he says in the report it is obvious that he had not been to Lincoln a second time but had based his recommendations on the situation as he had viewed it on his visit in 1791 (29). In choosing the alternative route he needed to show how it could be effected without increasing the danger from floodwater discharge to the lands east of Lincoln and also to reduce the flooding then commonplace in areas west of the city.

Jessop observed that the then present state of both those regions was due to the slow discharge of Witham waters, a result of an obstruction at Brayford Head, the narrowness of the waterways through bridges and particularly the constriction of the Witham within its retaining walls through Lincoln. To rectify this he made a number of proposals which, he concluded, would '... neither benefit nor injure ...' the landowners. Amongst his engineering suggestions was the raising and strengthening of the Witham embankments to enable them to contain four times the water flow then carried as a

maximum and the deepening of Sincil Dyke to help accommodate this.

In addition to the engineering and convenience advantages occasioned by the use of the High Bridge line, it was cheaper and Sir Joseph received copies of Jessop's two estimates for comparison (30).

Thus, Jessop had made recommendations for the prevention of flooding south of Lincoln and such works had also been stated as necessary by Bonner and Hudson (31). This view was supported by an independent Drainage Commissioners' survey made in the summer of 1791 (32). The water depth between Chapel Hill and Lincoln varied between 18 and 22 inches but the level was only some four inches below the top of the banks. John Linton wrote to Sir Joseph in early March 1792,

'... the Bottom of the River abounded with Tree Roots, so that to increase the Depth materially would be attended with an enormous Expense ... I do not dwell on this as being unfriendly to the proposed Extension of Navigation ... [but] I fear however that our Drainage Fund will not be found adequate to deepen the River till the Taxes are increased by a further Acquisition of private Property - If the Navigations of Horncastle & Sleaford can support the Charge I shd. not be jealous of such a Participation ...'

(33)

The meeting held on 8 March to consider the two reports was

chaired by Sir Joseph (34). It was decided that the High Bridge route was the more suitable provided that the safeguards to the Witham which Jessop had mentioned in his survey were carried into effect. Lincoln Corporation agreed voluntarily to pay the expenses of lowering the bed of the the river under the bridge itself and Richard Ellison likewise undertook responsibility for the costs of,

'... such parts of the same Communication as falls within the Jurisdiction of the sd. Lessee ...' (35)

The General Drainage Commissioners were charged to apply to Parliament for powers to complete the works at the joint expense of the Navigation Commission and the proprietors of the intended Sleaford and Horncastle Navigations,

'... without Burdening the said Navigation [Witham] with any additional Tolls ...' (36)

It was agreed that the authority for the High Bridge scheme and associated river works should be contained within a clause in the, then, Horncastle Navigation Bill. Sir Joseph was asked to attend to this (37).

Once the decisions had been taken on the course of the Fossdike/Witham link the Drainage and Navigation Commissioners turned their attention to the deficiencies in the Witham channel itself and the locks along it, as had been set forward in, for example, the Bonner and Hudson report.

They approached Jessop to clarify, and suggest remedies for, the deficiencies these two engineers had noted, for while the Commissioners may have been willing to allow local men to prepare preliminary surveys, they were not content to commit what may have been large sums without the second opinion of the most highly qualified engineering expert they could obtain.

Whether it was intended that two second opinions were to be secured is unclear but two were received and the second engineer, James Green, of Wollaton, Notts., may have been a Jessop-appointee to perform the preliminary work. In the event, on 3 July the Navigation Commissioners charged him to,

'... take a perfect Survey of the River Witham from the Grand Sluice to Lincoln High Bridge ...' (38)

Boston Corporation may have heard that it was intended to secure Green's services or they may have made the initial approach to him themselves and the Navigation Commissioners taken advantage of his presence in the area as, a fortnight earlier, they had agreed to employ him to make a survey of Boston town bridge and Boston 'Haven' (39). When finished, his survey included drainage works involving East Fen and the Maud Foster Drain (40).

Green arrived in Boston on 4 July 1792 and began work next morning (41), was visited by Jessop on 10 September (42) and presented his report and his bill in February 1793 (43). His

bill amounted to £113; representing a charge of one and a half guineas a day plus expenses. Banks had expected about this much but he thought the amount too high in general and bemoaned the lack of qualified men to undertake surveys. The demand for them was rising as the period of 'Canal Mania' was then beginning. He commented that

'... engineers are now grown so saucy that I rejoice he has not charged more ...' (44)

William Jessop reported to the General Drainage Commissioners in July 1793, some two months after making his survey (45). When writing his recommendations on the river improvements he proposed he noted that he had,

'... now before me Mr. Green's Plan and Profile, particularly describing the Shallows and the respective Depths of water thereon ...'

After discussing the reasons for the shallowness of the river he put forward ideas as to how the situation could be improved. The major works he suggested consisted of the rebuilding of the three locks which already existed on the Witham together with the construction of an additional staunch and lock at Stixwold, about 2 miles north of Kirkstead. Deepening and dredging for a total distance of about 3.5 miles and the purchase of two dredging barges was suggested also. With other works the total cost was estimated at £4691.

This could have been considered a very modest amount when the benefits it would bring to drainage and navigation were considered. However, no action on the report was taken and a reason for this lack of response may have been due to Banks' reactions to the proposals. His personal copy of this report is in existence and on it he has underlined several non-specific conclusions which Jessop had arrived at. In a number of instances Jessop had made statements such as,

'... IT IS NOT IMPROBABLE that the deepening of the River by dredging Barges ... may answer the Purpose ...'

'... IT IS PROBABLE that a sufficient Depth may be maintained ...' and,

'... AND I BELIEVE it will be found ...' (46)

While this type of wording was not unusual in such a report, Banks was possibly looking for some recommendations which could have been given with a greater degree of certainty.

In addition Banks did not agree with the need for a Stixwold lock (47). However, of greater importance in rejecting the scheme was the cost for, considering the state of the Witham finances at that time, the Commissioners must have been uncertain whether they could fulfil the plans as Jessop had presented them and in the light of what John Linton had told Banks the previous year this possibility is probably the correct one. Linton had said

'I fear ... that our Drainage Fund will not be found adequate to deepen the River till the Taxes are increased by a further Acquisition of private Property ...' (48)

and this had not happened.

What was to be done? The Witham/Fossdike link could go ahead as the expenses were being shared and at some time this arrangement must have been suggested for the remainder of the Witham works. Obviously it was in the interests of the local navigations to have a reliable Witham - there was no point in having a High Bridge link if vessels could not travel to or from it.

The High Bridge works were authorised in the Horncastle Navigation Act of June 1792 and the Drainage Commissioners engaged Michael Pilley, a local engineer, to conduct a series of surveys to bring these about, these surveys being destined to replace the 1793 report of William Jessop.

Three reports were forthcoming from Pilley. The first, signed by him alone, concerned the rebuilding of Kirkstead lock (49), the one most urgently in need of repair. The other two were made in collaboration with John Thompson (50), the surveyor of the Dun Navigation (perhaps by arrangement with Richard Ellison), one relating to the works on the High Bridge section and the Sincil Dyke and the other about the works to be made from the High Bridge to Stamp End lock (51).

As far as the rebuilding of Kirkstead lock was concerned, the project had been open to competition and a Mr. Hopewell had submitted a design. The Navigation Commissioners did not

consider it to be of great merit but before they would take a decision they passed it to Banks for his consideration, as it,

'... appears ... to be worthy of some notice. Under that Idea Sir I have taken the liberty to request you will be pleased to compare the Plans with each other ...' (52)

Hopewell's plan was delivered to Soho Square and although Sir Joseph did not have a copy of Pilley's scheme before him with which to compare, he having seen it only once at a Commissioners' meeting (53), he was inclined to agree that it did have its good points,

'... except that it has not some of the most recent improvements which have been made in the Principles of Lock building it seems to me a workmanlike Performance which does credit to the person who offers it ...' (54)

An additional drawback was that Hopewell had not submitted any estimate of the cost of his lock.

So, Pilley's design was accepted and, together with the two surveys made with John Thompson were, presented to the General Drainage Commissioners on 3 October 1794. The total estimate was £3497. This cost was divided between the Navigation Commissioners and the Sleaford and Horncastle Navigation proprietors and the link through the High Bridge into Brayford Pool was completed in 1797.

TATTERSHALL BRIDGE.

At the time when the minds of most General Drainage Commissioners were concentrated on the surveys for the High Bridge their minutes, for 19 February 1793, make mention of another bridge, that to be constructed across the Witham at Tattershall Ferry to carry a turnpike road from Sleaford to the village of Tattershall. The solicitor for the turnpike Bill, Benjamin Handley, appeared before the Commissioners at Boston that day with the request for its construction to replace the ferryboat then being used.

While this was the first reference in the Witham minutes to this scheme it had been in existence for some time and Sir Joseph was supporting it, in fact, he was Chairman of the turnpike promotion committee.

The promoters of the turnpike were the same people who were endeavouring to have a Sleaford Navigation brought into being and the road was seen as complementary to that proposed waterway rather than as a rival to it.

The intention of the promoters was to obtain a certain land communication between Sleaford and Horncastle. The road which then ran between Tattershall and Horncastle was in a good state of repair and it was the section from Sleaford which alone required the improvement. However, cutting across the direct line between these places was the Witham with the ferry link. With the increased traffic envisaged as being encouraged by turnpiking the road this ferry was thought to have insufficient capacity for the work it would be called

upon to undertake.

The decision to build a bridge appears first at a promotion meeting for the road held on 28 September 1792, chaired by Sir Joseph (55). He took that position at the next meeting also, on 30 October, when it was decided that a bridge could be constructed only if the full support of all the interested parties could be obtained. The two major 'interested' parties were the Witham Commissioners and Lord Fortescue, a neighbour of Banks' whose estates lay next to his along the River Bain. John Dyson (56), who at that time was contractor for building the Sleaford Navigation locks, was the choice of the meeting to prepare the plan and estimate for the making of the whole road, a distance of some 16 miles.

Dyson had these documents ready by November (57). In order to prevent any ponding-back of waters upstream in the Witham Dyson decided on giving the bridge the same waterway as the Grand Sluice, although with a different arrangement of piers. The Grand Sluice has three 17-foot clearways and a 15-foot wide lock and Dyson suggested that the Tattershall bridge should have two 19-foot clearways with one of 28 feet between. His estimated cost was £1,500 (58). Benjamin Handley, who was keeping Banks informed of the day-to-day developments, was very hopeful that this sum would be forthcoming from public subscription.

At that time the ferry was owned by Lord Fortescue and Handley thought it a good idea to approach him with a view to incurring the cost of the bridge himself and for him to take a toll on passing traffic. Banks was asked to put this proposition to his lordship, which he did, but the outcome

was not encouraging for, whilst approving of the road in principle, Lord Fortescue did not want to take upon himself the £1,500 building costs but, said Banks after their meeting, he

'... willingly subscribes £300 & his hearty good wishes & support & I have no doubt will be contented with reasonable terms for his ferry ...' (59)

This was the best Banks thought could be obtained and that they ought to be content and, if necessary, use his support and friendship,

'... as a great acquisition ...'

It was calculated that the ferry revenues amounted to about £6 a year and Banks secured Lord Fortescue's agreement to take £10 a year in lieu of these monies.

Thus, it was with these proposals and agreements that Handley made his appearance at the Witham General Drainage Commissioners' meeting on 19 February 1793. The Commissioners agreed to the construction (60) and their minutes noted that their decision should be communicated to Banks. Probably Handley had been anticipating this outcome for the following day he sent to Banks in London prepared clauses for a Bill dealing with the bridge which, with only slight comment, Sir Joseph concurred (61).

Dyson's design for the bridge may not have proved

acceptable to some parties as the matter was raised for consultation at a meeting of the promoters held in late May (62) when it was resolved to tender for a three-arch structure, the notice appearing in the local newspaper soon after (63).

One of the designers who submitted a proposal for this bridge was John Jagger of Gainsborough, then acting as contractor for bridge construction on the Sleaford Navigation, then being built. His plan for a single span structure was considered of sufficient merit to demand investigation and it was forwarded to William Jessop for his opinion (64). Jessop's remarks are not preserved but Jagger's bridge was built and stands today.

SIR JOSEPH AND ROBERT LANGTON BANKES.

Throughout his life Sir Joseph came into contact with all conditions of men and he seems to have held them in great respect if that approach was reciprocated. He dealt very shortly with those who attempted social familiarity outside their 'station' and he would not be 'used' for any person's private advancement. He recognised effort and achievement and paid due deference to them, requesting and acting upon advice from those who would be regarded as of a lower social class. However, he would not condone rudeness to his person or incompetence in work or business. In his connection with the

River Welland he met the former and, on the Witham, the latter. While he had some problems with William Bonner, the General Drainage and Navigation Commissioners' surveyor, it was with the Clerk, Robert Langton Bankes, that the greatest difficulties arose.

Robert Langton Bankes, snr. was a practising solicitor and had held high office in the community, being deputy Clerk of the Peace for Kesteven from 1764 to 1774 (65).

It was Langton Bankes' consumption of alcohol that was the cause of Sir Joseph's antagonism towards him, not because of the amount but of the effect it had upon the performance of his duty to the Commissioners.

An early instance of this occurred when Langton Bankes did not transmit the instructions of the General Drainage Commissioners to John Hudson and William Bonner when they undertook their survey of the Witham in January/February 1792, thus ensuring that their final report did not cover the effects which the lowering of Brayford Head would have on the Witham if a navigable link was to be made between the Witham and the Fossdyke via Sincil Dyke.

A few months later (66) another situation occurred about which Sir Joseph gave vent to his animosity towards the Clerk. Sir Joseph and a number of other Drainage Commissioners were meeting in the St. Albans Tavern in London. To quote Sir Joseph,

'... Mr. Bankes was so drunk he was incapable of drawing minutes or even of Copying them which was done by Mr. Bell [,] Town Clerk of Lincoln

...'

He was quite specific in his recommendations,

'... is this not a sufficient Reason for removing him from his Clerkship [...] his or rather our papers may be Lost mislaid Stolen etc etc all our minutes Journals etc were in his Possession & most of them at the St. Albans Tavern ...'

Later that year Langton Bankes wrote to John Linton a scrawling, barely legible missive in which he admits his 'affliction' and, because of the criticism he had been receiving from Sir Joseph personally, he submitted his resignation, trusting that Linton would,

'... permit my request - that you wd. immediately set me at Liberty ...' (67)

This request was rejected by Linton. Sir Joseph continued with his criticism and at no time is this more evident than in the period of negotiations before the drainage of East, West and Wildmore Fens.

It is known that Sir Joseph was actively encouraging these major works of drainage and navigation, being for the good of the county and for the enhancement of the value of his own property. However, during this time he is also known to have lost interest and withdrawn from any participation. The

reason for this has never been understood although it would now seem that Langton Bankes was the cause. In mid-November 1795 Sir Joseph was in London but, as usual, was being kept in touch by post with affairs in Lincolnshire. The minutes of the General Drainage Commissioners' meeting of 28 October were not received by him until 6 November, an error which he blamed on Langton Bankes entirely (68). The Clerk had been re-elected to that post with the General Drainage Commissioners only recently, an event of which,

'... I have now maturely considered the effect
... ' (69)

After making that statement Sir Joseph, probably writing to John Linton, gave reasons why he did not wish to have any responsibility in the negotiations then being undertaken,

'... I should not have persevered in such a resolution was I not fully certain that the Commissioners who usually attend [the meetings in Lincolnshire] have talents abundantly sufficient to do all the business that will be required of them & if I was not also of opinion that I have never been or can be of any material use to them, except in saving them some trouble in London, I am so little in the Country that it would be ridiculous in one to claim any merit in the success of proceedings not a sixth part of which it has ever been in my power to attend or

to think myself of any real consequence to a body whose annual Meeting I have never once had it in my power to assist at ...'

This is a most uncharacteristic Banks revealed here. He wrote more and gave further insight into what could have been the root cause although how much reliance can be placed upon his own assessment of the reasons for his actions may be open to some doubt. He stated that,

'... My real Motive is to withdraw my Character from the risque of suffering by the blunders of a Man who I think incapable of rightly performing the most simple part of his duty even when he is sober, a danger to which I must be constantly subject were I to undertake with him as my assistant the very difficult task of managing the revisal of the Witham Act in Parliament ...'

Sir Joseph was persuaded to continue with his work of promoting the East, West and Wildmore Fen drainage despite Langton Bankes and it was perhaps fortunate for the project that Langton Bankes died soon after, in 1803.

THE WITHAM IN THE EARLY NINETEENTH CENTURY.

It has been noted previously that early financial pressures on the Witham Trust forced the General Drainage Commissioners to curtail the amount of embanking they undertook prior to the river being declared 'open' in 1788. The embankment did not extend all the way from Boston to Lincoln but ended north of Carleton Dyke. North of Chapel Hill the river soon began to decay and silt up after 1788, so obstructing traffic, just as it had done many times in previous centuries.

At their meeting on 30 December 1802 the Witham Navigation Commissioners received a deputation of several merchants of Boston. They stated that,

'... if the Navigation of the River Witham was rendered safe and certain at all seasons, a very large proportion of the trade that now passes from the Staffordshire canals would be carried by the Witham through Boston to London.' (70)

It had been decided (71) that an approach should be made to the engineer, John Rennie (1761-1821), to report on the state of the river and its navigation and this was presented to the Commissioners on 6 January 1803 (72). Much of this report deals with the problems of drainage but the navigation aspects give a detailed picture of the Witham at that time. Rennie found the silting complained of and noted that this produced a very low hydraulic gradient and an explanation for

this was given by him,

'... I found the gates of the Grand Sluice completely silted up, there being about 10 feet of silt on their sill, and no water passing ... The River, therefore, in this state, may be considered nearly as a Canal ...'

To secure a more regular flow down the Witham the main recommendations included, completing the embankment of the river as far north as Lincoln; straightening and deepening part of the river and turning the Witham down its original, pre-1762, course in summer. This would tend to keep the Grand Sluice open and prevent the accumulation of large amounts of silt in Boston Haven. The estimated cost of these works was £58,400.

One of Rennie's recommendations had been that the locks at Kirkstead and Barling's Eau should be rebuilt and Banks had some comments to make about this. It was commonly assumed that Michael Pilley, the Navigation's surveyor, constructed them, indeed, that he saw to their construction personally (73). Banks was informed by Richard Ellison, the Fosdyke lessee, that this was not the case, and that William Bonner overlooked the building, according to the plans given to him by Pilley. However, Pilley constantly complained to the Navigation Commissioners about,

'... Mr Bonners indolence in not attending to the workmen who omitted Parts of the Sheet

piling and other underwater works recommended by Mr. Pilley in his Plan which is the Reason the Locks now fail and are likely ... to fall down.'

(74)

Banks would have sympathised as he also had had occasion to complain about Bonner's neglect of aspects of the works (75).

With these locks out of action the Fosdyke lessee was losing large amounts of trade and Ellison also informed Banks of this (76).

Nothing was done and Rennie's work was not acted upon but it was not forgotten. Once again it would seem that it was lack of finance which was responsible for the inactivity.

A new estimate for the scheme was made in 1806 by Anthony Bower of Lincoln, who was then working on the drainage of East, West and Wildmore Fens. In this project he was working with Rennie and the two were certainly in collaboration over the Witham improvements. Bower's plan, however, raised the costs to over £92,000 and Rennie was requested to examine this estimate and make recommendations. His revised estimate totalled £106,702! (77)

The renewed interest in the improvements probably resulted from the anticipation of a fresh source of finance - the funds of the General Drainage Commissioners being 'considerably increased', to use their own term, from the additional acre tax which would accrue from the part-enclosure of West and Wildmore Fens (78) and even more revenue was anticipated when this enclosure was complete. In addition, the Commissioners' opinion was that as the costs of

freightage would be reduced by the improved state of the Witham tolls could be increased when the works were finished.

Rennie's proposals were not accepted unanimously and doubts as to their practicability were voiced by many, in particular, the landowners on either side of the Witham south of Lincoln. Consequently, the General Drainage Commissioners instructed him to prepare a defence of his plan (79). This he did in the form of a letter to them which they then published (80).

In this defence Rennie ranged wider than the Witham river, advocating the improvement also of Boston Haven. Here he was referring to the silt accumulations which had occurred and he saw a bonus coming from his proposed works for,

'... Nothing essential in the way of Scouring Boston Haven, in its present State, can be effected, but by a Flood passing through it with Rapidity, as will be the case when the Witham is enlarged and embanked as is proposed ...'

This was seen as the final step necessary to complete the work of centuries and make the whole river a certain navigation at all times, bringing with it the inevitable financial and material benefits,

'... for if Vessels of large Burthen could be brought to Boston, and at a cheaper Rate than smaller Vessels now are; not only would the Merchants and Traders there be greatly benefited

but the Country would likewise share in it, by having their Produce sent cheaper to Market, and Articles for their Consumption imported at a cheaper Rate ...'

With Rennie's scheme and his reply to objections made, the joint Commissioners decided that the time was right to make application to Parliament for an Act to put the plans into effect and, by so doing, executing in full the provisions of the 1762 'Witham Act'.

In these proceedings Sir Joseph was taking a part. He was consulted on the practicability of the various schemes in his role as a Commissioner of both Trusts. When in London the minutes had been forwarded to him as had copies of the various items of correspondence between the engineers and the Trusts but he does not seem to have become actively involved as his energies were directed to the drainage works of East, West and Wildmore Fen and the problems associated with them. However, in about 1804 gout began to attack in earnest and, by 1806 he was, to all intents, an invalid - instead of directing operations he now began to leave the new works to the next generation.

ANALYSIS.

The improvement and continued success of the Witham drainage and navigation were fundamental to Sir Joseph's thinking regarding the south Lincolnshire waterways and it is this over-riding preoccupation that must be borne in mind in any consideration of his activities in this field. However, this was subordinate to his duties to the Royal Society and to Kew but, apart from an inability to attend many of the Lincolnshire meetings, these impinged little on his role.

From this it can be seen that Sir Joseph's major contribution was in a consultancy capacity. He had gained the practical and theoretical experience necessary to make valid judgements on hydrological and engineering subjects by the time of the commencement of his involvement in the late 1780's and this continued with vigour until his health forced a curtailment.

The local promoters concerned with developing the Witham looked to Banks for a layman's expertise in waterways' matters and a professional's style in contacts with the landed gentry and locally elected bodies. In these two functions he was invaluable. When in Lincolnshire he willingly gave of his time to chair meetings and engage in negotiations and he had the force of personality, social position and argument to change the minds of opponents, for whom his opinions carried authoritative weight. This was seen in the alteration of the attitude of Lincoln Corporation Council to the High Bridge route and his over-ruling of

Jessop in the eyes of the General Drainage Commissioners regarding his plans for making the link by way of Sincil Dyke. We further find the engagement of Michael Pilley to conduct surveys which superseded those made by William Jessop for the High Bridge route. This may have been a purely local expedient but, in view of what was occurring between Banks and Jessop on the Horncastle Navigation at this time, perhaps personal animosity led to Banks using his influence to have Jessop dropped in favour of the local man (see chapter 13 and Appendix A).

He did not always get his own way, though, as shown in the case of Robert Langton Bankes, snr. From the evidence which we have it would seem that this man deserved dismissal from his post as Drainage Commissioners' Clerk but, for some reason, they retained his services until his death, probably with Sir Joseph complaining about him until the end. It is unlikely that a suitable replacement was not available so it makes the Commissioners', and Linton's, decision to keep him all the more difficult to understand.

Banks' support and encouragement of other transport methods is shown in his concern for the bridge over the Witham at Tattershall and with the Sleaford to Tattershall turnpike road generally. He chaired meetings for the road's and bridge's promotion and, at the Witham General Drainage Commissioners' meeting on 19 February 1793 he was noted as being,

'... desirous to be one of a Committee to
superintend the necessary Clauses ... ' (81)

for obtaining the necessary parliamentary powers to construct the bridge. So he was willing to act in two capacities, as a promoter and as a guardian of the Drainage Commissioners' interests - roles which, in his person, were not seen as being in conflict, such was the degree of integrity and fairmindedness which both parties were willing to recognise in him.

From the evidence, Sir Joseph appears to have been sparing in the commitment of money to most of the Lincolnshire waterways' promotions. However, in the case of the Witham this was not so. By 1792 his financial involvement was £300 and, on this, he was willing to take reduced interest in order to see the enterprise flourish and, indeed, was so committed that an additional £1,000 was offered and accepted. A similar attitude prevailed in the case of the road with him making a subscription of £200. This speculative capital Sir Joseph could afford to expend and it must have been made in the knowledge that any meaningful financial returns were likely to be a very long time in coming.

Probably more than in any other waterways' enterprise, apart from the East, West and Wildmore Fens' promotion, Sir Joseph acted here in an 'active' role, taking part in negotiations and making decisions which were acted upon. In other instances it will be seen that the part he played was more passive, that is, more 'behind-the-scenes' in organising situations in which other parties could discuss and make the decisions, but based on Banks' advice. Even so, his role as 'catalyst' is one which can be recognised on the Witham and

which was to pervade all his dealings in this, and other, promotional and early developmental phases in Lincolnshire navigation and canal history.

CHAPTER SIX

EAST, WEST AND WILDMORE FENS.

This district of south Lincolnshire, now known as the 'Witham Navigable Drains', lies to the north-east of Boston. Today it is officially the Anglian Water Authority's 'Witham Fourth Internal Drainage District' and, under the 1762 'Witham Act', comprises the lowlands of Coningsby, Mareham, Hundlehouse, Revesby, Middleham, Moorhouse, Hermitage, Newholme, Westhouse, Langrick, Langworth, Swinecote, Hagnaby, Stickney, Wildmore Fen and West Fen. The boundaries of the District are the rivers Witham and Bain to the west; the 'highlands' of Mareham, Revesby, Hagnaby and East Kirkby to the north; the higher ground of Stickney and Sibsey to the east and the parishes of Skirbeck and Boston East to the south. To this area was added the lowlands of Wrangle and the East Fen by an Act of 1801 (41 Geo. III. c.134) (1).

In common with the works carried out on the River Welland with which Banks was involved, these fens were ones in which drainage was the main reason behind the land reclamation, with the navigation function of the straightened watercourses being a secondary consideration and seen as a 'bonus' to the completion of the scheme (2). This can be seen in, for example, the remarks made by Arthur Young who had,

'... conversation with Sir Joseph Banks, who I was very glad, but not surprised, to find, had the most liberal ideas upon the subject. No man sees clearer the vast advantages which would result from the measure to the country in general. No man can be more desirous that it should be effected; ... He has collected with the utmost assiduity every document necessary for the measure; and is prepared for it in every respect ...' (3)

For generations these fens had claimed the attention of Sir Joseph's forebears. His grandfather, Joseph Banks 11 had taken out a lease in 1735 from the landowners, the Duchy of Lancaster, for the East and West Fen (and also for an area called 'North Fen'). This lease had been renewed by William Banks, his son (and Joseph's father) in 1757 (4) and this land-holding passed down to Sir Joseph himself (5).

For the most part this flooded fen was extra-parochial and consisted of a huge area of common land over which several parishes had rights of pasturage. Of importance to the history of the draining were the rights on the West and East Fens of the parishes of the Soke of Bolingbroke.

It was only in the summer months that this right could be exercised because, in winter, with no drainage provided and being such low-lying land it was, for the most part, covered with water. Very few people lived there permanently: those who did lived in huts on the isolated mounds of slightly

higher ground which were deposits of moraine left by the decaying ice sheets of the Pleistocene period. These inhabitants looked after the cattle sent onto the fens in the summer and supplemented their existence by rearing geese and by fowling and fishing.

There had been early attempts to drain these fens, one such undertaking being in about 1532. A product of this was the 'Maud Foster Drain', a cut made from Cowbridge to Boston Haven. This wide channel was completed in 1538 and is still a major drainage course today.

A scheme for the reclamation of part of East Fen was proposed at the end of the reign of Elizabeth I. when it was envisaged that about half the area could be recovered but, apart from a survey, nothing further was attempted.

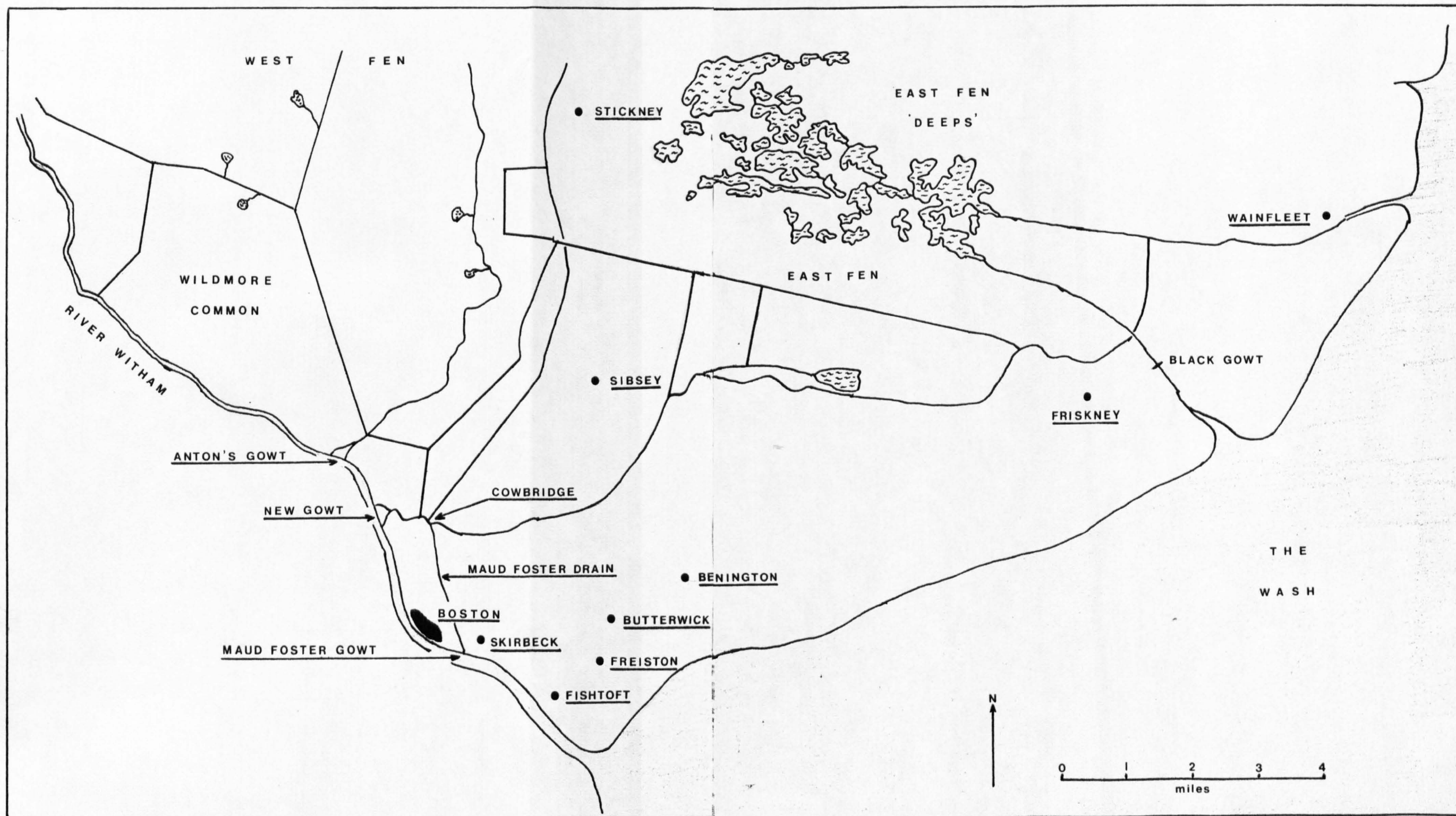
W.H. Wheeler (The History of the Fens of South Lincolnshire, Boston, 1896, pp. 203-4) quotes Camden (1602) to give an idea of the condition of this area at that time.

'The Fen called the West Fen is the place where the ruffs and reeves resort in great numbers, and many other sorts of water fowls, which do not require the shelter of reeds and rushes, migrate hither to breed, for this fen is bare, having been imperfectly drained by narrow channels which intersect it for many miles. Twenty parishes in the Soke of Bolingbroke have right of common on it ... The East Fen is quite in a state of nature, and exhibits a specimen of what the country was before the introduction of drainage. It is a vast tract of morass,

intermixed with a number of lakes, from half a mile to two or three in circuit, communicating with each other by narrow reedy straits. They are very shallow, none above four or five feet deep but abound with pike, perch, ruffs, bream, tench, dace, eels, etc. The reeds which cover the fens are cut annually for thatching not only cottages but many very good houses ...'

In 1603 there was a series of serious floods which broke down the embankments which existed along the East Coast and great destruction on the fenlands ensued, extending from the Humber estuary to Essex. The main cause of these disasters seems to have been the lack of maintenance of the works. The new king, James I., declared that, for the honour of his kingdom, he would not let these areas be abandoned to the '... will of the waters ...', nor let them remain a wasteland and unprofitable. If no other person or group would undertake their drainage, he would become the 'undertaker' (6). To pay for this a proposal of taxation for the lands' recovery was made but rejected by the House of Commons, a financial restriction which limited the works undertaken by the king to the 'Great Levels' of Cambridgeshire and Norfolk.

A quarter of a century later the state of the three fens had not altered; indeed, a Court of Sewers held at Boston in 1631 found that what drainage there was on the East Fen had deteriorated and that the land was generally flooded for varying periods of the year. The Court found that these lands were capable of recovery, but at a price, which was put at



THE EAST AND WEST FENS IN THE MID-17th. CENTURY (after Dugdale)

KEY	
	Main drains
	Undrained marsh

the levying of a ten-shilling an acre tax for repairs to the natural outfalls of the main drains, which numbered six and were at Wainfleet; near Friskney (Black Gowt and Simons Gowt); at Skirbeck into Boston Haven (Maud Foster Gowt); and into the Witham at New Gowt and Anton's Gowt. In default of payment of this tax a concession was granted to Sir Anthony Thomas and others to become the undertakers for drainage. As payment for the works they were to receive part of the drained land.

The tax revenues were not forthcoming and, from 1631 to 1635, Sir Anthony worked on the Maud Foster. Dugdale says that he,

'... made a great and navigable stream, three miles in length, from Cowbridge to the Haven, near Boston, and at the end of it the old Maud Foster Gowt was replaced by a very large gowt of stone and timber.' (7)

Waters from West Fen and the south of East Fen were diverted from discharging into the Witham at Anton's Gowt to the Maud Foster Drain and, by so doing, the 'Adventurers' managed to reclaim, in total, about 16,300 acres from which they received a rental of £8,000 a year. This sum seems to have caused great discontent amongst the tenants who, in 1642, broke down the Adventurers' works. Petitions and parliamentary action ensued, resulting in the Court of Sewers taking responsibility for the district again in the late 1660's.

From then until the 1770's various other attempts were made to drain parts of the area, such as those of John Grundy, snr. (c.1696-1748) in 1744 and Lord Monson in 1757.

A meeting was held at the 'St. Albans Tavern' in London on 16 April 1774 (8) at which the principal landowners in the fen district considered the findings of a series of meetings which had been held at Spilsby the previous year to determine a general drainage plan. As the handwritten report of this meeting is contained within Sir Joseph's personal papers it is possible that he was present. John Grundy, jnr. (1719-1783) was appointed to make the survey, which was completed by the end of 1774 (9). He estimated the cost of a general drainage at over £37,000 and this sum was most likely considered too high as nothing was done. Of this scheme, Sir Joseph said that after the presentation of Grundy's report,

'... the business fell to the ground & was no more that I remember talkd about ...' (10)

From this time and until the beginning of the 1790's there were some additional small-scale schemes for various parts of the district but, as so often was the case, no action was taken to implement them (11).

Wheeler gives us a description of these fens at about this time (12). He notices that disease and cattle stealing were rife and that the fens were still in an unsatisfactory state,

'... owing to their lost and flooded condition
...'

and that the system of common pasturage appeared to be falling into chaos with no regulation as to the numbers of cattle being sent onto the fens. As he says,

'... in fact it was stated that some of the largest common right owners had ceased for several years to send any stock to the fens ...'

The ultimate improvement of these fens for agriculture and the development of drainage channels, both natural and artificial, into navigable waterways, depended primarily upon the successful enclosure of the area. This was recognised by Sir Joseph at least by 1779 and, almost certainly, earlier.

The year of 1779 can only be noted definitely in this connection as it was then that Banks was in communication with the Office of the Duchy of Lancaster, from which he held his leases, regarding the drainage and enclosure of East and West Fen. A petition to do this was read at the Duchy Court on 24 April (13) and the decision was made not to oppose such a request but if it came to fruition the Crown, as Lord of the Manor, would take one-twentieth of the land and also,

'... such further Allotment as the [Duchy] Commissioners shall deem adequate & reasonable Compensation ...' (14)

Again, a blanket of silence falls over the activities of the fenland improvers, this time for a decade, although it is

known that all interest had not ceased. In October 1780 Banks, in the company of his steward, Benjamin Stephenson and the Boston engineer, John Pacey, took boats from Stickford to view East Fen, an activity possibly undertaken in connection with the Duchy of Lancaster's proposition. In addition, Banks tells us that, in 1785, James Creassy (?-c.1807) circulated proposals for undertaking the same business for about £13,000 as Grundy had estimated at £37,000 but there was no reaction from the landowners.

Agitation for drainage improvements may have been lacking in the early part of the 1780's but, by the end of the decade, the need for it could no longer be ignored, particularly as the Witham General Drainage Commissioners now desired such improvements to be made so as to safeguard their works already completed on the Witham.

Sir Joseph was in the vanguard of this agitation as he had,

'... myself at diverce Times viewd the East Fen & the drains leading from it into Maud Foster & have no doubt of the Practicability of draining the whole of that Fen & the adjoining Land at a very moderate expense ...' (16)

However, a general drainage scheme was not then proposed by the Witham General Commissioners. They appointed William Jessop and James Green to make a survey of only part of the district in July 1792 (17) and Jessop prepared a report respecting the drainage of the lowlands of the parishes of Leake and Wrangle, both in East Fen, by the September (18).

Jessop saw this as only the beginning of a general drainage and he made his opinion known to John Linton (19) and Sir Joseph (20) when he met them. In writing to Linton, Banks stated his agreement with Jessop regarding this general scheme but added the proviso that he felt that he was too busy at that moment to consider entering into it personally, due to pressure of other work, of

'... drainage, embankments, Navigation, Turnpikes, Roads & enclosure ...' (21)

Jessop's report was considered and accepted at a meeting of landowners held at Boston on 23 October (22) and they wrote to Banks requesting his opinion as to the wisdom of calling a further meeting to discuss applying to Parliament for powers to, first improve and then divide East, West and Wildmore Fens, an area totalling about 40,000 acres. This group had taken up Jessop's general drainage idea with enthusiasm but, unfortunately, they were not representative of all those who had rights on the fens as they all originated from the neighbourhood of Boston. There were those who considered the scheme as proposed too costly to be economic and this included those landowners from the Soke of Bolingbroke who had common rights on the fens, although their motives for opposition may not have been as pure as they maintained (23).

It was Sir Joseph's opinion that these particular landowners would be very difficult to win over or satisfy. They seemed to be concerned over the loss of water for their

cattle which would result from the drainage, they said, despite the decline in the use of the fens as summer pasturage as reported by Wheeler. In support of their claim, however, is the fact that they were in almost continuous conflict with the graziers of the 'East Holland Towns' over this (24). Banks saw that there would be the fear by the Soke parishes that anything the East Holland Towns supported must be to their detriment, and so oppose it.

Banks was in favour of a parliamentary application being made and John Linton, as Chairman of the Witham General Drainage Commissioners, set in motion the legal process. However, the Soke objected to the, as they supposed, undue haste (25) and they voiced this objection to Sir Joseph who rather dismissed it, thinking that they would be placated quite soon (26). He seemed to have been unaware of the animosity and hatred that the proposals were producing for, in mid-December 1792, a copy of an anonymous note, found fixed to a signpost in Sibsey, was sent to him. It read,

'This sarvs to let you know the Common you shall not have a Pocklington King Saul or Drunkin Martin [Pocklington was a drainage surveyor, 'King' Saul and 'Drunken' Martin were two major landowners] - For three Raskals if a disturbance their be. Hanged you shall be. Not one Pocklington Saul or Martin Shall be left on the Earth. The Common from the poor of Sibsey as we have hard say ye have taken away for Raskals at a shout or the we quickly will come and lay all

Down for the grose of the Land are as the Sand.
 the Law we have in our Commons you want to pine
 us to Death ye Raskals. we Let you know it shall
 no be so. All the Land in England Sich as you do
 not want the poor not a acre can get. hanging be
 too good for you. impart with your Land to one
 Hundred a year that we might live. their is
 Kinder and Grant their hash shall pant. All sich
 as you if a pore Mane comes to your hous not a
 crust will you give how do you think the poor
 can live. Not notice like a dog. The Lord as
 stopt your Careear. you now not what may be next
 year. the poor do not hate Lest Deth be your
 fate - Fidel that great man Will come in with a
 Share. For Sibsey.' (27)

With these sentiments being openly expressed it was little wonder that Banks failed to reconcile the various interests and the general drainage attempt was abandoned for a few years, although the idea was, again, not forgotten.

In 1798 he was in contact with William Tatham (1752-1819), a military engineer, who claimed that the previous attempts at fen drainage had not been very successful as they had been based on,

'... eroneous principles ...'

He was planning to put his ideas into print and requested an opportunity to see Sir Joseph's collection of papers on

the subject. This was agreed to as long as Banks was satisfied as to the practicability of Tatham's proposals. At this, Tatham excused himself for being too hasty in his request to see the Banksian documents and asked just to discuss his ideas with him instead. This time it was Banks who asked to be excused using lack of available free time as an argument. Sir Joseph disliked the thought of people who were trying to take advantage of him without being entirely honest and this Tatham appeared not to be. This seems to have been all the contact there was between the two men and Tatham published, 'The Political Economy of Inland Navigation, Irrigation and Drainage ...', the following year (28).

New plans were put forward by the engineer, Edward Hare (?-1816), in June 1799 under the instructions of the 4th. District drainage commissioners (29) who had also engaged Anthony Bower (30) and John Rennie. The scheme which was produced proposed that drainage of Wildmore and part of West Fen should be via Anton's Gowt and include the waters coming from the 'highgrounds' as far north as the southern scarp slope of the Lincolnshire Wolds. This included the area of the Soke of Bolingbroke. East Fen would drain through the Maud Foster Gowt but, owing to later objections, it was suggested that an additional cut to the Witham be made at Fishtoft. After much discussion and alternative suggestions the drainage commissioners and Boston Corporation agreed on the Fishtoft outlet and the discharge of the Wildmore and West Fen waters through the Maud Foster.

It was during these discussions that the navigation function of these drainage channels is mentioned again. At a

meeting of landowners with common rights in the fens held in December 1800, with Banks in the Chair, it was,

'Resolved that no Powers be contained in the Act [to be applied for] for making the Drains more navigable than they will naturally be, but that all persons be permitted to navigate upon them, under the Controul of the General Commissioners for Drainage.' (31)

Despite continued opposition an Act for enclosing East, West and Wildmore Fens was obtained in 1801 (32), with an amending Act following two years later which altered the boundaries of the 4th. District (33).

For the remainder of Banks' life this drainage work continued and was not completed until the 1860's. That this was a drainage work with a navigation function as a very obviously secondary consideration is not open to question but, without the navigation facility the drainage could not have been undertaken with any ease, this land surface being a most unreliable medium for transportation. The use of the drains as they were being constructed is illustrated by an incident reported by Anthony Bower to Sir Joseph in 1808 when a 40-foot section of banking gave way at Cowbridge which sank three boats, one carrying coal and two transporting cinders (34). Coal deliveries to the inhabitants of the fens in the early years of the 19th. century had to be by water as Banks' most vociferous opponent, the Rev. Edward Walls of Spilsby, somewhat unclearly states when, in the early part of December

1805,

'... a vessel of about 5 keels of coal delivered at Hob-Hole 114 chaldrons which were about 15 or 16 chaldrons more than she could have in ...'

(35)

The drainage channels in the area of the 'Witham Navigable Drains' today run in all directions from the Witham in the west (from between Boston and Chapel Hill), eastwards along the foot of the Lincolnshire Wolds to Wainfleet and from there southwards towards Boston. The area covered is some 40,000 acres and navigation controlled by four locks, at Anton's Gowt and Cowbridge, the only ones in operation now, at Hagnaby and at Lade Bank. However, today as in Sir Joseph's time drainage and not navigation is the *raison d'être* of the waterways.

ANALYSIS.

In Sir Joseph's opinion, and that of many others also, a successful drainage and enclosure of these three fens to the east of the Witham would represent the conclusion of centuries of work. This brought into cultivation a vast area of formerly marginal and waste land which was needed desperately in view of the growing national urban populations and the urgent problems brought about after 1793 by the French Wars, which were raising agricultural prices dramatically.

To Sir Joseph personally this was perhaps as important a project as the Witham improvements as he had a large financial interest in seeing the scheme come to fruition. As lessee of the fens under the Duchy of Lancaster their improvement would bring a great increase to his personal income and, from increased acre tax, the Witham authorities would raise additional revenue and so help to make that undertaking a more certain success.

Apart from the personal reasons for involvement in the project, Arthur Young pointed out the altruistic, as,

'... No man sees clearer the vast advantages which would result from the measure to the country in general ...' (36)

In fact, when Young was making his inspections for his survey on the state of farming in Lincolnshire he was given

much assistance by Sir Joseph. The subject of fen drainage was much discussed between the two men and Young must have heard of Banks' opposition to the claims made by the Soke of Bolingbroke, probably by the Soke landowners themselves and he commented upon this,

'... When I told him [Banks] that upon enquiring why these horrid fens were not drained and divided, it was said that 'Sir Joseph Banks was like a great bull at Revesby, ready with his horns to butt any one that meddled', he replied, 'very true, Sir Joseph is that bull to repulse those who would pretend to carry the measures upon wild and ill concerted plans in spite of him, but let them come forward in the right way, and with any prospect of success, and they shall find the Revesby bull a lamb ...' (37)

The 'catalytic' role is again in evidence as seen in the communications between himself and John Linton concerning the employment of James Green and William Jessop for the 1792 surveys and also in his attempts to reconcile the views of the East Holland Towns' and the Soke of Bolingbroke landowners. In this he failed probably because he underestimated the strength of feeling of his opponents (as shown by his comments to Arthur Young, quoted above) but, with the drainage authorities and Boston Corporation also in agreement with his ideas, the Soke's arguments were lost in the weight of opposition against them.

It is in this opposition by the Soke that one of Sir Joseph's most intractable opponents emerges in the person of the Rev. Edward Walls. This Spilsby cleric led the fight against Banks in a series of published pamphlets which criticised everything from the defects in Sir Joseph's case to his handling of public meetings. Walls was one problem which became less important as the drainage works progressed during the early years of the 19th. century but one which was, as far as can be seen, never amicably resolved.

This series of events, together with at least one anonymous, threatening note which is known about, was a long way removed from Banks' original intention not to become personally involved due to pressure of work. The reasons he gave for this, concerns with drainage, embankment projects, navigations, turnpikes and enclosures, were still there later, as were his duties outside Lincolnshire, but the tide of events drew him into an ever-increasing commitment, particularly as the drainage works progressed after 1801 and the enclosure of the drained area had to be undertaken. However, that aspect of Banks' life is not under consideration here; it is sufficient to note that in the promotion period up to 1801 he was able to act as an originator of ideas and as the supporters' representative in London, seeing the passage of the enabling legislation through Parliament.